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NAME OF AUTHOR/*NOM DE L'AUTEUR* Basil J. Favaro

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NAME OF SUPERVISOR/*NOM DU DIRECTEUR DE THÈSE* Dr. T. Aoki

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DATED/*DATÉ* August 1/74 SIGNED/*SIGNÉ* Basil Favaro

PERMANENT ADDRESS/*RÉSIDENCE FIXÉ* Site 4 Box 17
R.R. #1
Glace Bay, Nova Scotia

NL-91 (11-73)

THE UNIVERSITY OF ALBERTA

# AN ETHNOGRAPHIC APPROACH TO FORMATIVE EVALUATION OF THE SIMULATION: TRANSITION


by

Basil Joseph Favaro


A THESIS

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The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research for acceptance, a thesis entitled "An Ethnographic Approach to Formative Evaluation of the Simulation: Transition," submitted by Basil Joseph Favaro in partial fulfilment of the requirements for the degree of Master of Education.

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Supervisor

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## ABSTRACT

This study was concerned with the development and operationalizing of a conceptual scheme for formative evaluation of a simulation called Transition. Transition was designed as part of a curriculum package of Project SURT (Study of Urban Rural Transition), a subproject of Project Canada West, for use by students of Canadian secondary school social studies.

As an integral part of the developmental process, the formative evaluation was considered a formalized evaluation of Transition to identify deficiencies and successes to enable the making of revisions in its formative stage of development. The intent of the study was therefore to provide feedback information into the developmental process so that decision-makers, the simulation development team, could make improvements in their product.

Three basic components of Transition were recognized as being worthy of evaluation: the sequence of activities, the scenario of materials and the simulation model. The model for Transition was viewed as having two dimensions--a substantive dimension as presented by the Community Systems Model, and a process dimension as presented by the method of inquiry postulated by Charles W. Morris and incorporated into the decision-making process of the simulation.

The evaluation of Transition was conducted in several

phases. A preactive phase occupied the investigator with questions of what and how to evaluate. An ethnographic investigation of the simulation process rather than an experimental study of a pretest-posttest nature was chosen as the means of formative evaluation. Data sources which facilitated the description and judgement of participant transactions with the simulation were observations of the simulation leader and non-participants, audiotapes and videotapes of selected segments of the simulation experience, participant interviews, a participant questionnaire and classroom documents including participant worksheets and speeches.

The first interactive phase involved an initial testing with volunteer grade nine students at Vernon Barford Junior High School. The second interactive phase consisted of a major piloting with a grade nine class. Their simulation experience occupied seven hours of actual class time over four teaching days. Both initial testing and major piloting were observed in their entirety by the investigator.

Assessment and revisions of the simulation were made in two stages. In the first postactive phase data were analyzed from an ethnographic perspective. The second postactive phase involved the development team in an extensive assessment of the simulation model and revision of all materials and activities.

This study has clearly demonstrated that

investigation into the process dimension of a simulation in its developmental stage by means of an ethnographic research approach is an appropriate means of formative evaluation.

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TABLE OF CONTENTS


| CHAPTER | | PAGE |
|---|---|---|
| 1. | INTRODUCTION | 1 |
| | THE PURPOSE OF THE STUDY | 1 |
| | THE PROBLEM | 1 |
| | THE NEED FOR THE STUDY | 2 |
| | DEFINITION OF TERMS | 3 |
| | THE SIGNIFICANCE OF THE STUDY | 6 |
| | SCOPE AND LIMITATIONS | 7 |
| | PLAN OF THE REPORT | 8 |
| 2. | REVIEW OF RELATED LITERATURE | 10 |
| | FORMATIVE EVALUATION: A CONCEPTUAL SCHEME | 10 |
| | EVALUATION OF SIMULATIONS: PAST AND PRESENT TRENDS | 13 |
| | The Meaning of Simulation | 14 |
| | Research Dealing With Simulations | 15 |
| | ETHNOGRAPHY: A CONCEPTUAL SCHEME | 24 |
| | SUMMARY | 32 |
| 3. | THE DEVELOPMENT OF THE TRANSITION SIMULATION | 33 |
| | THE DEVELOPMENT CONTEXT | 33 |
| | THE DEVELOPMENT MODEL | 36 |
| | THE SIMULATION MODEL | 41 |
| | THE CONSTRUCTION OF THE TRANSITION SIMULATION | 45 |
| | SUMMARY | 48 |

CHAPTER PAGE

4 FORMATIVE EVALUATION . . . . . 50

FORMATIVE EVALUATION: PREACTIVE PHASE . . . . 51

FORMATIVE EVALUATION: FIRST INTERACTIVE PHASE . . . . . 58

Transition: Feedback from First Interactive Phase . . . . . 59

FORMATIVE EVALUATION: SECOND INTERACTIVE PHASE . . . . . 66

FORMATIVE EVALUATION: FIRST POSTACTIVE PHASE . . . . . 68

Interviews . . . . . 69

Questionnaire . . . . . 77

Worksheet Summary . . . . . 82

Analyses of Interviews, Questionnaire and Worksheets . . . . . 85

SUMMARY . . . . . 89

5 SECOND POSTACTIVE PHASE: SIMULATION ASSESSMENT AND REVISIONS . . . . . 91

TRANSITION: REVISION OF ACTIVITIES AND MATERIALS--PHASE 1 . . . . . 92

TRANSITION: REVISION OF ACTIVITIES AND MATERIALS--PHASE 2 . . . . . 95

TRANSITION: ASSESSMENT OF THE SIMULATION MODEL . . . . . 99

SUMMARY . . . . . 104

6 SUMMARY, CONCLUSIONS AND RECOMMENDATIONS . . . . 105

SUMMARY . . . . . 105

CONCLUSIONS . . . . . 111

RECOMMENDATIONS FOR FURTHER STUDY . . . . . 113

BIBLIOGRAPHY . . . . . 115

APPENDICES . . . . . 121

## LIST OF FIGURES


| Figure | | Page |
|---|---|---|
| 1. | The Social System and Its Component Subsystems | 37 |
| 2. | Phases of Teaching | 39 |
| 3. | An Adaption of the Johnson-Aoki Model | 42 |
| 4. | Three Inquiry Configurations | 43 |
| 5. | Classroom Setting For Major Piloting | 57 |

## LIST OF PHOTOGRAPHS


| PICTURES | | PAGE |
|---|---|---|
| 1 | Simulation leader introduces Transition . . . . | 142 |
| 2 | Particpant groups read materials and engage in designative inquiry . . . . . | 142 |
| 3 | Administrator makes class presentation to promote his community . . . . . | 142 |
| 4 | Participant groups engage in appraisive inquiry as they decide on their goals for the simulation . . . . . | 142 |
| 5, 6, 7 | Resident groups interact with administrators and move toward prescriptive inquiry and final decision-making . . . . . | 144 |
| 8 | Participant groups re-evaluate goals . . . . . | 144 |
| 9 | Administrators prepare for additional rounds of interaction . . . . . | 146 |
| 10 | Simulation leader conducts an intermediate debriefing session . . . . . | 146 |
| 11 | Participants compute credit and satisfaction points after decision-making . . . . . | 146 |
| 12 | Participants engage in final debriefing . . . . | 146 |

# CHAPTER 1

# INTRODUCTION

## 1. THE PURPOSE OF THE STUDY

The purpose of this study was to describe and evaluate the transaction between the participant students and the simulation called Transition as a means of revision of the simulation. Transition was constructed to simulate the problems faced by Canadian families as they move from rural to urban and urban to rural centres. The simulation was developed as part of the curriculum package of Project SURT, a subproject of Project Canada West, and was designed for students of secondary school social studies. In this study the investigator attempted to determine the variance between "what was" and "what was desired" when students transacted with displays contained within the simulation so as to enable the development team to make necessary revisions in the first draft of their product.

## 11. THE PROBLEM

The problem under investigation was how to conduct a formalized formative evaluation of three basic components of Transition: the simulation model, the sequence of activities and the scenario of materials. As a means of formative evaluation, the study attempted to answer the following

questions:

1. What inquiry process do participants use in handling information presented them by the simulation and how well do they use the structured inquiry process of the simulation?
2. What activities are participants engaged in during their simulation experience and how well do they participate in the identified activities of the simulation?
3. What are the participants' perceptions of and attitudes toward their experience of participation in Transition?

## 111. THE NEED FOR THE STUDY

Formative evaluation is vital in the preactive phase of instruction, the development of instructional plans. The process of piloting, debugging and revision must take place during the formulation of intended outcomes, design of instrumental content and development of teaching strategies. Evaluation of these components of an instructional plan should not be treated casually but rather should be carefully built in as part of the developmental process.

This study was undertaken to serve the immediate need of formative evaluation of Transition in which have been incorporated numerous intended outcomes, strategies and displays. As well, the study was conducted to test the

importance of systematic evaluation during the developmental process. Instructional planners tend to treat evaluation very casually, often as an afterthought. This formalized formative evaluation was conducted based on the belief that evaluation is crucial in the developmental process.

## IV. DEFINITION OF TERMS

In this study the following definitions of terms were used.

### Formative Evaluation

Formative evaluation is a role of evaluation as distinct from summative evaluation, both of which operate at different times in the formulation of outcomes and development of instrumental content and teaching strategies. It is the feedback of product information into the developmental process while it is still fluid. (Scriven, 1967)

### Instructional Planning

Instructional planning is the preactive phase of teaching, the phase which links curriculum and instruction. Instructional planning has two major components: (1) instructional content, and (2) teaching strategies. The instructional content component consists of two sub-components: (1) the intended outcomes and (2) instrumental content. (Johnson, 1968; Aoki, 1970)

Instrumental Content

Instrumental content is that content which is instrumental to the goal, the intended outcome. It is the object, event or action with which students transact cognitively, affectively and conatively. Instrumental content is a major component of an instructional plan. (Johnson, 1968; Aoki, 1970)

Simulation

Simulation is a symbolic model of a social situation. It is a selective representation of reality containing those elements of reality deemed relevant by the designer. Its purpose is to provide situations in which participants can experience decision-making. (Coleman, 1968)

Educational Simulation*

Educational simulation is a plan for instruction which, when operationalized, allows students to assume the role of decision-makers in a simulated environment which has specified rules and procedures. It is designed to give students a vicarious experience of a social process which they may meet in later life.

Decision-making

Decision-making is a fundamental cognitive and affective activity of man. It is a process whereby an individual chooses one of a number of alternatives in both

*Henceforth referred to as simulation.

appraisive and prescriptive situations; i.e., when he sets goals and determines actions to be taken to achieve goals. It may be a rational and/or non-rational process.

Variance

Variance is a lack of congruence between "what is" and "what should be" in an instructional situation.

Inquiry

Inquiry is a reflective process involving signs and directed to solving problems so that action may proceed. It may be of three types. Designative inquiry deals with problems of what has happened, is happening or will happen. Appraisive inquiry deals with problems of what should be. Prescriptive inquiry deals with problems of what should be done. The three modes of inquiry are complexly interrelated and never completely separated. Any inquiry process can have a designative, appraisive or prescriptive configuration. (Morris, 1964; Aoki, 1970)

Transaction

Transaction is the fundamental interaction in instruction between student and selected segments of his environment, that is, the instrumental content displayed. In the classroom setting the fundamental interaction is complicated by the mediating presence of an instructor and other students. There is interpersonal interaction which has a large bearing

on the affective climate of the social setting. (Johnson, 1968; Aoki, 1970)

Ethnography

Ethnography is a method of describing a particular culture from a first-hand investigation. Culture is restricted to mean the knowledge people use to generate and interpret social behavior. The ethnographer selects informants from a cultural scene. These informants share information that defines some aspect of their experience in a social situation. They in fact teach the ethnographer in the ways of life which they find meaningful. (Spradley and McCurdy, 1972)

## V. THE SIGNIFICANCE OF THE STUDY

This study emerged in part from an interest in a segment of the Curriculum and Instruction Design Model developed by Johnson (1968) and adapted by Aoki (1970). The segment of special concern was instruction during which students transact with selected segments of their environment (displays). In this systematic evaluation, Transition was considered as a general display within which there were many displays with which students could transact. The investigator feels that this study has contributed to an illumination of the transaction process in the classroom.

This formalized evaluation study assisted the developers in making further revisions after the first major

piloting. Viewed as an initial step in the investigation of a simulation process, this study contributed to an understanding of what goes on during a simulation experience from the viewpoints of participants and observers.

Many simulation studies have placed great emphasis on objectivity, quantification and experimentation. This study has shown ethnography to be a promising alternative to statistical research and an approach which fits well into formative evaluation of curricular materials. The investigator feels that this study is significant in demonstrating that a description and assessment of the process dimension of a simulation is a logical and worthwhile focus for simulation investigations at least in the formative stage of development.

## VI. SCOPE AND LIMITATIONS

This study was limited to a formative evaluation of a specific simulation in the development of which the investigator was directly involved. The evaluation was specifically intended to provide feedback information into the developmental process for the purpose of improving the simulation.

In essence the study was both descriptive and judgemental. It attempted to describe and assess the transactions between participant students and the simulation and to determine student perceptions of and attitudes to their simulation experience. No attempt was made to determine

the learning effects of the simulation or the effects on the decision-making ability of participants. The study can be viewed as an initial investigation into the process dimension of a simulation.

One grade nine Alberta Social Studies class of 28 students was involved in the major class piloting. This major piloting was confined to a duration of seven hours over four teaching days; i.e., three consecutive days and one five days later. An initial testing, confined to one four hour session, with 11 volunteer grade nine students not involved in the major class piloting was conducted prior to the major piloting.

An obvious limitation was the Hawthorne effect. The major piloting was a novel situation for students in that the setting was the school library rather than the regular classroom. Two videotape recorders and four audio recorders were in operation during selected segments of the simulation experience. Effort was made to control for the Hawthorne effect however by restricting the number of outsiders to three, two cameramen and the investigator himself, and by positioning the recording equipment so as to be as inconspicuous as possible.

## VIII. PLAN OF THE REPORT

A review of literature pertaining to formative evaluation, trends in simulation evaluations and the

ethnographic approach to evaluation is reported in Chapter 2. In Chapter 3 are presented the rationale, framework and actual procedures for the development of the simulation Transition. Chapter 4 deals with the manner in which the conceptual scheme for formative evaluation became operationalized. Major revisions of the simulation activities and an assessment of the simulation model are presented in Chapter 5. In Chapter 6 are presented a summary and conclusion of the study as well as a number of recommendations for further research.

# CHAPTER 2

## REVIEW OF RELATED LITERATURE

In this chapter is reviewed literature pertaining to the following major themes:

1. Formative Evaluation: A Conceptual Scheme.
2. Evaluation of Simulations: Past and Present Trends.
3. Ethnography: A Conceptual Scheme.

### FORMATIVE EVALUATION: A CONCEPTUAL SCHEME

This section is concerned with a review of literature related to evaluation in general and formative evaluation in particular. The literature related specifically to the goals and roles of formative evaluation has provided the investigator with a conceptual base for the evaluation of Transition in its formative stage of development.

In an overview of readings in curriculum evaluation, Taylor and Cowley (1972) pointed out that there are two dimensions to evaluation: a descriptive dimension and a judgemental dimension. According to them, the more critical and complex judgemental dimension has often been overlooked by evaluators. Taylor and Cowley describe the most recent post-Sputnik era in evaluation as characterized by the realization that the domain of evaluation must be extended to incorporate the all important judgemental dimension.

Cronbach (1963) defined evaluation broadly as

"the collection and use of information to make decisions about an educational program" (p. 672). He emphasized that the greatest service evaluation can perform is to identify aspects of a course where revision is desirable. In Cronbach's words:

> Evaluation used to improve a course while it is still fluid contributes more to the improvement of education than evaluation used to appraise a product already placed on the market. (1963; p. 677)

As Cronbach has indicated, evaluation must occur during the preactive or planning phase of instruction rather than solely afterwards when developers are more reluctant to revise the intended outcomes, instrumental content and strategies incorporated in their products.

Similar views on evaluation have been voiced more recently. Scriven (1967) pointed out that evaluation should be a fundamental part of curriculum development, not an appendage or afterthought. He has criticized evaluation research which assumes that one's obligations in the direction of evaluation are fully discharged by having it appear somewhere in a project.

In his formulation of a conceptual framework for curriculum evaluation, Scriven differentiated between the goal of evaluation and the role of evaluation. The goal of evaluation is the answering of product-oriented questions about educational instruments; whereas the role of evaluation refers to the use to which evaluation is to be put. Scriven further distinguished two roles of evaluation, formative and

summative, which operate at different times in the development of programs and more specific products.

According to Scriven, formative evaluation refers to the feedback of product information into the developmental process for the purpose of improving the product. Summative or terminal evaluation involves the collection of data concerning an already operating program for the purpose of making judgements about the program. Scriven has emphasized that curriculum projects must try to make best use of evaluation in both of these roles. In emphasizing the role of formative evaluation, Scriven said:

> Any curriculum reformer is automatically engaged in formative evaluation . . . . As he proceeds to construct the new material he is constantly revising his own material as better than that which is already current . . . . He is presumably engaged in field testing the work while it is being developed and in so doing gets feedback on the basis of which he can produce revisions; this of course is formative evaluation. (1967; p. 30)

Both Cronbach (1963) and Scriven (1967) recognized the importance of systematic formative evaluation in the discovery of "deficiencies and successes in the intermediate versions of a new curriculum". Cronbach in particular identified numerous approaches to systematic evaluation. These include process studies, proficiency studies, attitude and follow-up studies. Process studies are concerned with events taking place in the classroom. According to Cronbach, process measures such as videotapes, audiotapes and direct observations of classroom transactions have special value

because they focus on what happens during instruction. Proficiency studies utilize standardized tests as the main source of feedback data. Attitude studies usually take the form of direct and indirect questioning via interviews and questionnaires and can be still another valuable source of feedback into the developmental process. Cronbach described follow-up studies as being least important for formative evaluation since they are so far removed from the developmental process.

The literature related to curriculum evaluation clearly indicates that the particular approach to evaluation which developers use greatly affects the nature of the feedback information and therefore the entire revision process. As Cronbach has pointed out, the advantages and disadvantages of each approach must be carefully weighed before the intermediate versions of intended outcomes, instrumental content and strategies incorporated in a product are formatively evaluated.

## EVALUATION OF SIMULATION: PAST AND PRESENT TRENDS

Numerous evaluative studies have been carried out since the first appearance of simulations on the education scene. Although these studies exhibit great variation in terms of quality, scope, design and findings, they are similar in their focus on the impact of simulations on participants, both cognitively and affectively. Rather than enumerate the many investigations into the impact of simulations which have

been carried out, selected simulation literature and research studies are reviewed to indicate the general trends in simulation evaluation.

## The Meaning of Simulation

The distinction between games and simulations has been a matter of much dispute among social scientists and educators. The terms gaming, simulation and simulation games have been used synonymously by some writers while others are adamant in opposing this usage. Those who distinguish between "game" and "simulation" equate the former with a contest, involving competition among participants and yielding a winner and the latter with co-operation in the achievement of common goals. Nesbitt (1968) attributed the choice of terms to the particular image which educators are trying to project rather than the meaning of the words themselves. He noted that the word "simulation" is used with those who might be suspicious of using "frivolous" games in the classroom whereas the word "game" is often used with students who might associate "simulation" with "work".

Rather than providing an all-embracing definition of "game" and "simulation", Nesbitt investigated how games and simulations were used as educational tools. He defined "simulation" as:

> . . . an operating model of a physical or social process . . . a selected representation of reality, containing only those elements of reality that the designer deems relevant to his purpose. (1968, p. 38 )

Nesbitt pointed to competition for specified objectives as a key element in games and concluded that the kind of technique used in most classrooms combined the elements of simulations and games. Students assume the role of decision-makers in a simulated environment and compete for certain objectives according to specified rules and procedures. It is for these reasons that Nesbitt and others have preferred to use the term "simulation game" to convey the essence of this technique.

The developers of Transition have preferred to describe their product as a simulation. The investigator has attempted to be consistent in his use of the term "simulation" in this report.

Research Dealing with Simulations

One of the first major reviews of research dealing with simulations was conducted by Cherryholmes (1966). She examined the research findings from the following six simulation studies: Anderson (1964), Boocock (1963), Boocock and Coleman (1965), Cherryholmes (1966), Garvey and Seiler (1966) and Robinson, Anderson, Herman and Snyder (1966). Cherryholmes hypothesized that simulation participants would reveal more interest, retain more facts and principles of information, retain information longer, acquire more critical thinking and decision-making skills and have attitudes more significantly altered than students participating in more conventional classroom activities. She concluded that simulations do

produce more student motivation and interest but found no significant differences in learning, retention, critical thinking or attitude change.

While the quantity of simulation research expanded considerably between 1966 and 1971, the quality of available research did not particularly improve. Fletcher (1971) criticized simulation research for being still in its infancy stage. He cited the following reasons:

1. Lack of standardized workable games.
2. Extreme variations in objectives, structure, subject matter, task complexity and interaction.
3. Inadequacy of simulation models.
4. Disagreement on appropriate administrative procedures when simulations are used for learning.

Fletcher concluded that most simulation research was of a "shotgun" nature consisting of single studies on particular simulations each using its own tests to measure different sets of dependent and independent variables.

Information regarding the effectiveness of simulations in the classroom is limited in spite of their popular acceptance. Wentworth and Lewis (1973) carried out a systematic review of the research conducted on instructional games and simulations in social studies education. They pointed out that although most simulations are designed to influence the cognitive, attitudinal and behavioral characteristics of participants, most of the research on simulations

has investigated only aspects of one or two of these variables.

They classified available research into six categories, having to do with the investigation of:

1. the feasibility of using simulations in the classroom,
2. personal characteristics of participants as variables related to their performance,
3. student behaviors, strategies and interactions during participation in simulations,
4. the use of simulations to teach thinking skills,
5. the impact of simulations on other cognitive learning,
6. the impact of simulations on the interest and attitudes of participants.

In a reaffirmation of the conclusions of Cherryholmes (1966) and Fletcher (1971), Wentworth and Lewis described most simulation research as suspect because of inadequate testing procedures and research design, use of unsophisticated statistics and the inability to determine important variables. They drew the following conclusions regarding simulations as teaching devices:

1. Simulations do not appear to have any clear advantage in teaching content.
2. Simulations appear to have a positive influence on participant attitudes.
3. Simulations appear to be influential in encouraging students to become more actively involved in the learning process.

Available research on simulations has been criticized recently for probing questions of convenience rather than those of importance to users and developers. Many of the evaluations of simulations have relied on paper and pencil tests which have limited measurement capabilities for simulation investigations. In their critique of evaluation procedures, Wentworth and Lewis indicated the extreme difficulty for the simulation process to be measured by paper and pencil tests given at the end of the simulation experience. In their own words:

> . . . The weakness of paper and pencil tests is that they measure secondary data of a static nature. They tell us what students have learned. This past tense information tells us little about how the learning environment can be manipulated to maximize student achievement and understanding. (1973, p. 439)

An analysis of the three reviews of Cherryholmes (1966), Fletcher (1971) and Wentworth and Lewis (1973) indicates that the great majority of simulation evaluation studies have focused on the impact of simulations on the cognitive and affective learning of participants. Remaining unanswered are questions such as 'What behaviors are observed when people participate in simulations?', 'What modes of inquiry do participants use at various stages of their simulation experience?' These unanswered questions clearly indicate the need for an investigation of the actual simulation process as a means of determining what students do when they are learning rather than what they have learned.

The notion of investigating the simulation process is receiving more attention in current literature on simulations. In a position paper on the evaluation of simulations, Instructional Simulations Incorporated (I.S.I., 1972) have distinguished three objects of simulation evaluation: a simulation model, a sequence of operations and a scenario of materials.

A system's model or representation of a real world system is the core of the simulation. According to I.S.I., it is most important that evaluators consider whether the simulation model has the integrity of a system. Such a test involves two major questions: First, does the model allow a flow of actual data in the manner which approximates the real world system being replicated? Second, can the model replicate and respond to the full range of data that might be presented to it? I.S.I. have emphasized the importance of the simulation model having validity in the system's sense and integrity if students are to learn a community model through participation in the simulation.

A second basis for evaluation lies in the sequence of operations, the series of tasks which correspond to the tasks and functions of the models being simulated. The sequence of operations has been overlooked as simulation research has instead focused on what students have learned. I.S.I. have recognized the necessity of an investigation of process. If students are unable to perform a task, whether it involves

negotiating or making a decision, then the task components of the simulation must be revised and resequenced.

A third simulation component is the scenario which allows various states of the world to be introduced to participants. The scenario may or may not be enriched with background materials and resources. Nevertheless, according to I.S.I., the importance of a balanced scenario cannot be underestimated in evaluative terms. Students must have the opportunity for in-depth involvement with simulation materials.

I.S.I. have urged future evaluators of simulations to develop "process measures" rather than recall or transfer learning indices or some ex post facto design. Their elaboration of the components of a simulation have indicated the necessity for a simulation evaluation to focus squarely on the variables and factors which prompt model integrity and operational validity.

There have been few evaluation studies directed at an investigation of participant transactions during their simulation experience. Included among the limited number of process studies which have attempted to identify important behaviors during a simulation experience are those of Feldmiller (1970), Chartier (1972) and Wentworth (1972).

A study by Feldmiller (1970) was based on the interaction of participants in the home economics simulation Choice and Chance. It was found that the verbal behavior of participants could be recorded and categorized so that key

questions, words and issues could be identified and analyzed. Feldmiller discovered that participants tended to ask more procedural and directional questions initially and gradually became more independent of the instructor. While the value of the findings was not adequately discussed, the study is significant in being one of the first to analyze the simulation process rather than measure student differences before and after the simulation or measure results in terms of stated goals.

Chartier (1972) used the game Generation Gap with undergraduate students in an introductory speech class to investigate the value of linking discussion with simulations in order to maximize their learning potential. He hypothesized that subjects who participated in a simulation with a discussion component would demonstrate more learning at the cognitive and affective levels than subjects participating in a simulation without discussion, discussion without simulation or neither (independent study). Chartier administered a predisposition indicator to each subject and developed an achievement test to measure levels of cognitive learning. The only significant difference between experimental and control groups was that subjects who participated in a simulation with discussion demonstrated higher learning outcomes at the cognitive level than subjects participating in either simulation or discussion.

Evidence supporting claims that simulations generate

more interest and motivation than more conventional class activities has been quite substantial: Anderson (1964), Cohen, Dill, Kuehn and Winters (1968), Shirts and Sprague (1966), Cohen (1969). However, the findings of these and Chartier's study may be attributed to nothing more than the Hawthorne or novelty effect produced by the newness of the simulation method. Indeed the validity of all studies which attempted to measure the learning effects of simulations without carefully controlling for the Hawthorne effect can be seriously questioned.

A study by Wentworth (1972) attempted to determine the effectiveness of the game Marketplace for teaching introductory economics in selected two year colleges. In order to measure the cognitive and affective learning effects, Wentworth conducted an investigation of student verbal behavior during their participation. He found that student responses became more positive, co-operative and reinforcing as the simulation progressed. Student verbal behavior showed no evidence for convergent, divergent or evaluative thinking. There were no additional gains in positive attitudes toward economics and little evidence to indicate carryover into subsequent classroom interactions.

Wentworth's study is significant in its attempt to determine the broad impact of a simulation by the measurement of attitudinal, cognitive and behavioral variables during simulation participation. The study was concerned with

the simulation process but merely as a means of determining the learning effects of the simulation. No attempt was made to investigate the simulation process per se.

In an enumeration of the many research problems associated with gaming and simulation, Goodman (1973) postulated that the fact that learning related to games takes place both during and after the game experience has served to obscure the problem of doing research on games. Much of the simulation literature refers to the importance of post-game debriefing discussions. However, according to Goodman, there is reason to believe that reflections on this debriefing process do not terminate when a game terminates.

The problem for simulation research, in the words of Goodman, is:

> to develop a broad enough research paradigm to permit the analysis of the way games infect a total learning environment. (1973, p. 934)

There is a need for simulation researchers to focus on the formalized nature of simulation exercises so as to produce data which might in some way indicate what is actually going on as participants engage in decision-making. There is an appropriate posture for simulation research to assume. Goodman has described it in the following way:

> It would appear far more exciting and profitable to allow efforts to determine when (under what circumstances) gaming "works" with efforts to discover why it works rather than to move toward producing ever more convincing evidence that there are times when it does seem to work. (1973, p. 939)

Such a stance clearly indicates the need for simulation

research workers to begin an investigation of the process dimension of a simulation.

## ETHNOGRAPHY: A CONCEPTUAL SCHEME

In past education research, preference appears to have been given to the statistical analysis of group data. Researchers have tended to fit many problems to the statistical approach. There is evidence, however, in recent literature to indicate a growing shift toward a broader conception of appropriate research methods. Mitra (1974) has described the emphasis on the scientific method and in particular the use of statistical and psychometric techniques as an unhealthy development in educational research. The quantitative, statistical orientation which has come to permeate the entire field of educational research has resulted in a study of problems which are statistically easy to handle but which have relatively little significance and value for the discipline of education. Mitra has called for a "systematic study of significant problems rather than a scientific study of insignificant problems". It is most important, according to Mitra, to strike a balance and produce research which is worthwhile, significant, relevant and understandable to those willing and able to bring about change in education. Such research can be controlled, reliable and valid without being totally statistical.

Of the various nonstatistical approaches, the methodology from anthropology known as ethnography is being

considered as a promising alternative to research which relies heavily on statistical analysis. Ethnography literally means "writing about nations", derived from the Greek noun "ethno" which is usually translated as "nation or tribe of people" and the Greek verb "graphy", translated "to write". Erickson (1973) has stated that any social network forming a corporate entity in which social relations are regulated by custom can serve as a unit of ethnographic analysis. The school classroom is more frequently being considered as one such social unit.

Shaver and Larkins (1973) have described the dimensions of the instructional setting for the social studies as more complex than that for mathematics and the exact sciences. The social studies have more interrelated cognitive, affective and interpersonal behavior objectives. Shaver and Larkins have considered ethnography a method of research which may provide more knowledge about the intricate interrelations among teachers, students and their environment than the traditional statistical research approach.

The approach of the ethnographer is very different from that of the statistical researcher. The statistical researcher strives toward objectivity, the removal of his influence from data and findings, and as a result separates himself as much as possible from students and their social context. He tends to investigate a limited sample of behavior--that which can be measured, controlled, manipulated

and analyzed.

The orientation of the ethnographer is in sharp contrast. The ethnographer is immersed in direct and continuous contact with the objects of investigation. His approach is more holistic as he attempts to examine behavior in a broad context. The advantages of such an approach have been summed up by Shaver and Larkins as follows:

> The ethnographer's continuous involvement in the setting is more conducive to looking at process than is the measurement of static chunks of behavior sliced off prior to, during and after treatment. (1973, p. 1256)

In his analysis of the contrasts between the ethnographic and statistical research approaches, Erickson (1973) has recognized ethnography to be an inquiry process rather than a reporting process. The ethnographer is guided by a point of view and implicit questions which he brings with him to the field rather than by a set of standard techniques. The ethnographer's questioning-in-the-field results in a description of the regularities in social behavior as he experiences and views the whole social situation. The classroom ethnographer attempts to determine the inside view of students, for whom the same classroom events may look very different.

The ethnographer's approach has been recognized as more appropriate for the generation of theory about instruction than that of the statistical researcher. In a comparison of the functions of the two approaches, Shaver and Larkins have said:

> The characteristics of the statistical tradition--the stress on a carefully narrowed scope of inquiry, predetermined variables, and precise objective instruments--make it well suited for hypothesis testing and theory verification. On the other hand, the ethnographer's immersion in the object of study, his deliberate attempts to be sensitive to many things, and his open search for unanticipated relationships between persons and systems are well suited to the identification of important variables and their antecedents and consequences--the basis of theory generation. (1973, p. 1257)

In their description of the ethnographic method, Spradley and McCurdy (1972) pointed out that the ethnographer seeks consciously to be more objective and to represent accurately what people know and believe. However, it must be recognized that between the events of social behavior and the investigator's descriptive account is an important variable--the investigator himself. In the words of Spradley and McCurdy:

> In any research, selective observation and selective interpretation always work to transform the 'actual events' into 'facts' that are used in a descriptive account. Complete objectivity may be the characteristic of some omniscient observer, but not of a human being. (1972, p. 13)

Spradley and McCurdy recognized the importance for an investigator to realize the problems of selective observation and interpretation and to be conscious of the influences of social behavior on his study.

The school is indeed far more complex than any ethnographer's description of it. According to Erickson (1973) the ethnographer's descriptions are "caricatures or systematic distortions". The ethnographer deliberately selects and

reports details which allow him to get his point across. Erickson has stressed the need for ethnography to provide back-up data to illustrate the decisions made during the research process, descriptions of the kinds and amounts of data not available and examples of available data which are inconsistent with the overall point of view presented in the ethnography. Further he has acknowledged the ethnographic method to be one of "disciplined subjectivity" rather than "objectivity".

Ethnography has been recently subject to intensive methodological study and investigation. According to Wallace (1970), ethnography is a description of social interaction which is the product of cognitive sharing and/or nonsharing. Wallace described individuals as each having many cognitive maps (goals, plans and rules concerning appropriateness of behavior) for every social situation. The job of the ethnographer today is to infer the system of rules which people apply to social situations rather than to tabulate frequencies and intercorrelations of observed behaviors. In the view of Wallace, the task of the ethnographer today is to

> produce primarily not naturalistic or statistical descriptions of regularities in overt behavior but descriptions of the rules which actors are presumably employing or attempting to employ in the execution and mutual organization of this behavior. (1970, p. 41 )

The "new ethnography", according to Sturdevant (1964), aims at the inference of rules and plans of one's cognitive map structure from verbal and non-verbal behaviors. The

process of ethnography requires the use of categories based upon informants' experiences of social situations rather than the ethnographer's own preconceived categories. Cognitive anthropologists have emphasized the need for ethnography to be a description of an inside rather than an outside view of members of a social situation. The ethnographer today must ask those he is studying to become his teachers and instruct him in the ways of life which they find meaningful.

Spradley and McCurdy (1972) have maintained that ethnographic research should be conducted from the perspective of cultural scenes. They have defined "cultural scene" as "the information shared by two or more people that defines some aspect of their experience". A cultural scene is the knowledge which actors employ in a social situation. Such a definition is based on a cognitive conception of culture which excludes observable patterns of behavior and restricts the culture concept to ideas, beliefs and knowledge.

In a presentation of student ethnographies, Spradley and McCurdy have illustrated how an ethnographer presents a vivid description of the rules and plans which people use daily in order to achieve desired ends. These rules, which are learned through symbolic communication or inference from behavior, determine both the range and pattern of human behavior. According to Spradley (1972) these rules are learned at different levels: knowing, understanding, believing and internalizing. Individual variations in behavior are the

result of the levels at which rules are learned.

Among the social situations which have been described by Spradley and McCurdy are a junior high school, Jehovah's Witnesses, a third-grade class, kitchen culture, a second-grade recess and fire-fighters. Variations of behavior within any of these social situations may be attributed to the rules which individuals have learned. Rules are associated not only with ideal behavior (what individuals feel should be done) but also with presumed behavior (what individuals of a cultural group think others do). As Spradley has pointed out, both ideal and presumed behaviors may differ from real behavior (what individuals actually do). Spradley has contended that social interaction is largely dependent upon the presumed behavior of others and therefore acknowledged the notion of presumed behavior as a helpful tool in an analysis of cultural scenes.

Smith and Geoffrey (1968) conducted a major classroom ethnography in an attempt to find out how middle-class teachers cope with lower-class elementary school children. The study identified numerous data sources. A non-participant observer (the investigator) provided an outside view of classroom transaction via written descriptions of classroom events, interpretive comments, audiotaped summaries and classroom documents. A participant observer (the teacher) provided an inside view of intended and actual class transactions. Students were also recognized as potential

participant observers and important data sources. Smith and Geoffrey used their data to generate concepts such as pupil esteem and teacher awareness and to develop hypotheses for verification by statistical research.

The research conducted by Smith and Geoffrey indicated the need for the ethnographer to enter his study with questions in mind. Smith described these questions as "foreshadowed problems" which guide the ethnographer's perceptions and provide a focus for observation. Such questions are very different from formal hypotheses in statistical research which serve to structure the research setting and screen out unanticipated data.

It would appear that ethnography and formative evaluation make a successful marriage. According to Shaver and Larkins (1973), ethnography fits well into what Scriven (1967) refers to as "seat of the pants" research which is necessary in the formative stages of curriculum development. Since formative evaluators must be attentive to unanticipated student and teacher reactions to aspects of the curriculum being evaluated, it would appear that the ethnographic approach is most appropriate at this stage of evaluation. The rigorous designs and objectivity of the statistical research approach might be more appropriate in summative evaluations of the worth of finished products.

## SUMMARY

This chapter has dealt extensively with three themes pertinent to the present investigation. In the first, a conceptual scheme for formative evaluation during program development has been discussed. In the second theme, the literature and research related to simulation evaluation has been reviewed. In the third, a conceptual scheme for classroom ethnography has been presented. Subsequent chapters will deal with the manner in which these conceptual schemes became operationalized in a formative evaluation during the development of Transition.

## CHAPTER 3

## THE DEVELOPMENT OF THE TRANSITION SIMULATION

Conducting a formalized formative evaluation of Transition was the major objective of this investigation. Nevertheless the author considered it important to present a preliminary account of the development of the simulation. The present chapter is an attempt to present the rationale, framework and actual procedures for the development of Transition. This chapter is divided into the following sections:

1. The Development Context
2. The Development Model.
3. The Simulation Model.
4. The Construction of the Transition Simulation.

### THE DEVELOPMENT CONTEXT

Transition was developed as part of a curriculum package of Project SURT. SURT (The Study of Urban Rural Transition) is one of fourteen subprojects of Project Canada West, a regional curriculum development program for the four western provinces established in April, 1970, under the Canada Studies Foundation. Project Canada West recognized the primacy of the teacher as initiator and developer of new Canadian Studies curricula and adopted as its theme the 'continuing Canadian concern' of urbanization. Project SURT,

under the broad umbrella of 'urbanization', adopted the specific theme of transition from one community to another.

Project SURT focused on two basic research questions associated with urbanization, namely: What does one need to know about a community in order to live successfully as a citizen in that community? How does a person adapt to successful living in a different community? SURT recognized that these questions are faced by those who migrate from urban to rural or rural to urban Canada.

Canada is composed of many communities of varied sizes and life styles. Project SURT views each of these communities as a social system composed of many interacting subsystems: the family system, the recreation system, the communication system, the economic system, the religious system, the education system, the government system and the services system. The community is not a static entity but rather a dynamic system of interacting subsystems. Project SURT takes a socio-cultural dynamic approach to Canadian society. Since its inception SURT has attempted to develop instructional materials which will be instrumental in helping students assess the changes occurring within Canadian communities and the changes which occur as people make a transition from rural to urban or urban to rural centres.

The author's involvement with the SURT team began officially in September, 1973. As a graduate student in the Department of Secondary Education at the University of Alberta,

the author received a Graduate Teaching Assistantship from the university which required him to become an active member of the SURT curriculum development team. Shortly thereafter, three meetings took place to acquaint new members with the project's purpose, past activities and future plans. In early October the twelve member SURT team was divided into two sub-committees: one, consisting of four teachers and five students, would attempt to develop case studies; the other, consisting of three new members, would attempt to develop a simulation. The simulation development team consisted of Jane Sterk, a graduate of the Master of Education program at the University of Alberta whose graduate thesis involved the design of a simulation incorporating the modes of inquiry of Charles Morris, and Bjarne Myhre and the author, both graduate students in the Department of Secondary Education at the time. It was the decision of the SURT team that both the case studies and the simulation would be part of one curriculum package designed for students of secondary school social studies.

On October 3, 1973, the simulation development team with its headquarters at the University of Alberta was officially recognized by Project SURT. In mid-October a meeting of the entire team was held in order to establish a theoretical framework which would ensure a goodness of fit between the case studies and the simulation. It was decided at that time that all developers would use the basic SURT

model of the Community as a Social System. All materials developed by the SURT team would focus on four subsystems: the education system, the government system, the economic system and the recreation system, with the family system being the common thread. Both case studies and simulation would deal with Canadian families in their specific relationship to the selected subsystems and their general relationship to the remaining subsystems of the basic model. Figure 1 on the following page shows the components of the SURT MODEL.

## THE DEVELOPMENT MODEL

The model used by the developers in the construction of Transition was an adaptation of the Johnson-Aoki (1970) Curriculum and Instructional Design Model. Johnson (1967) distinguished between a curriculum development system and an instructional system. He defined curriculum as "a structured series of intended learning outcomes". (p. 6) These intended learning outcomes (I.L.O.'s) are selected from the available culture, the cultural content, and are organized and structured according to explicit criteria. According to Johnson, curriculum is the end product of the curriculum development process.

Curriculum serves as a guide to instructional planning. Curriculum, the output of the curriculum development system, becomes the input of the instructional planning system. According to Aoki (1970) instructional planning is the preactive phase of the instructional system and the phase

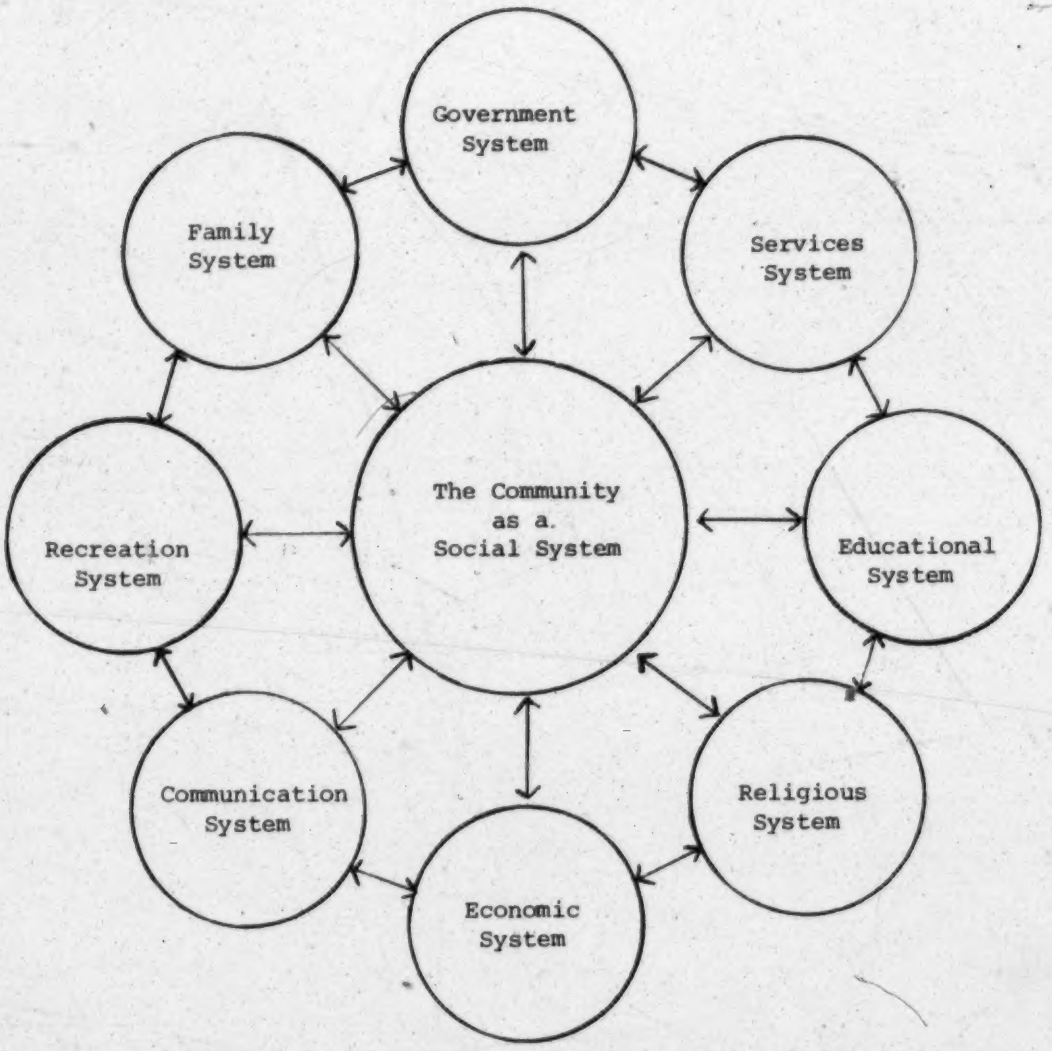


Figure 1

The Social System and Its Component Subsystems

(PROJECT SURT, 1971)

which links curriculum and instruction. Instructional planning has two major components: (1) instructional content and (2) teaching strategies. Instructional content consists of two sub-components: (1) the I.L.O.'s and (2) instrumental content. Aoki (1970) stated:

> Instrumental content is the given, used to guide students to the ILO. Instrumental content is the object, event or action with which students transact affectively, cognitively and conatively. A good instrumental content is seductive, pregnant with the possibilities for involved intellection . . . . It is the stuff with which students transact, and in this transaction, the instructor is not a participant, but a mediator; he is a stage manager and a director, not an actor. (pp. 5-6)

Throughout the entire development process, the simulation development team considered the simulation as incorporating instructional content and teaching strategies.

Johnson (1968) conceived of instruction as the interactive phase of the instruction system. Instruction is essentially an interaction process in which the "fundamental interaction" is the transaction between "an individual student and selected segments of his environment". These "selected segments" with which the students transact form a "display". The role of the instructor is to present "displays" and control the classroom setting. Figure 2 shows Aoki's (1971) Phases of Teaching Model. Aoki describes the student's transaction with "displays" as being "complicated by the mediating presence of an instructor and other students" (p. 10). As well as transactions with selected segments of the environment, the instrumental content displayed, there is

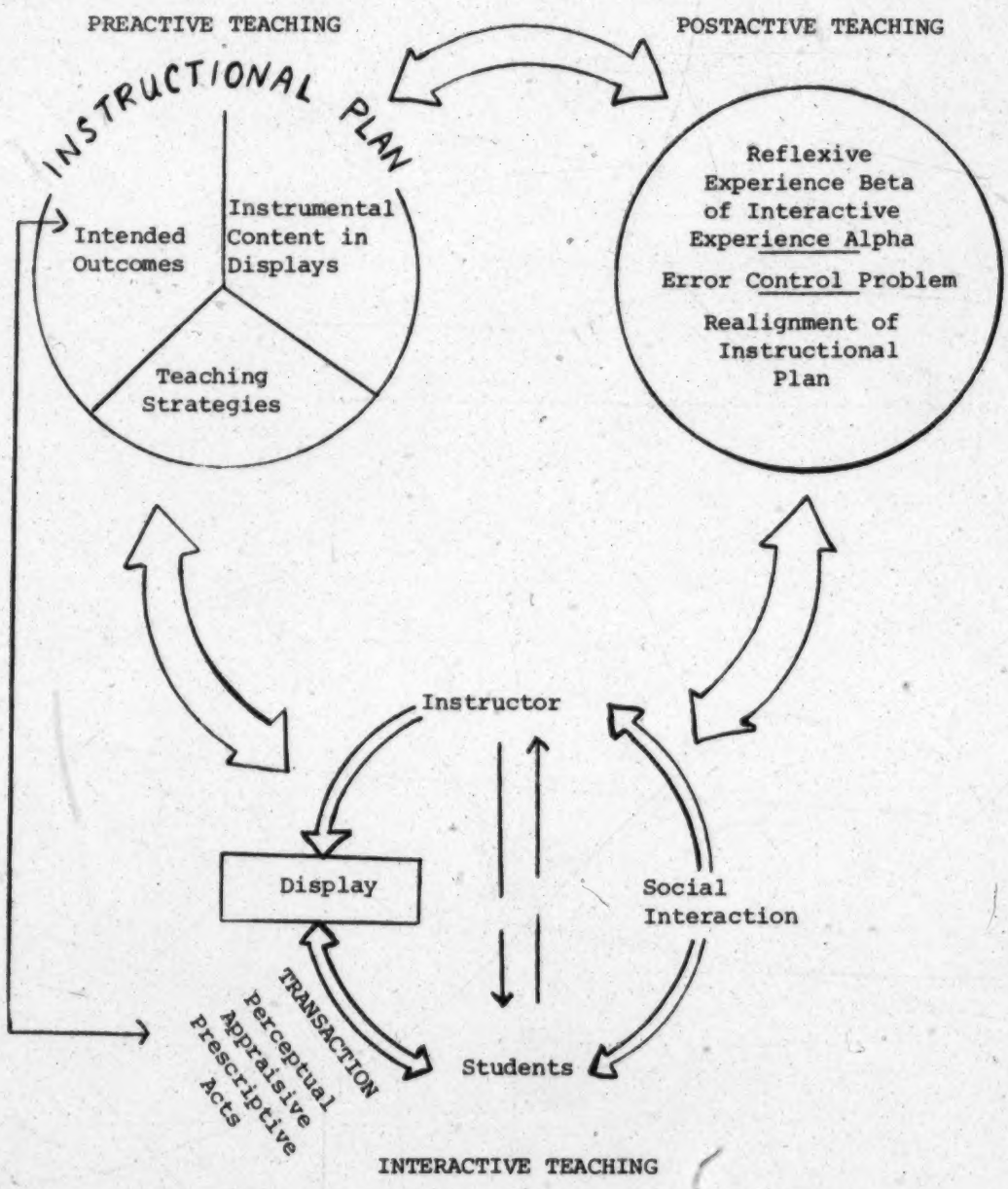


Figure 2

Phases of Teaching

Aoki, 1971

also interpersonal interaction which greatly affects the affective climate in the classroom setting.

In the designing of Transition the developers viewed themselves as instructional planners. As experienced teachers they were always cognizant of the process of instruction. In the very early developmental stages the simulation development team viewed students as future participants in a simulation experience rather than as learners. The developers were aware of the whole notion of learning by experience, particularly by simulation experience, being seriously questioned by educators. The intended outcomes formulated during the development of Transition could adequately be labelled "intended experiential outcomes" rather than "intended learning outcomes". These I.E.O.'s were never static but rather were continually revised as the development proceeded. While the development team attempted to design a product which would be instrumental in achieving the general objectives of Project SURT, the more specific intended outcomes of Transition were continually subject to formative evaluation.

Within the context of the Aoki Model, the simulation when actually piloted was viewed as a display within which there were many displays. Many segments of the environment were selected by the developers in the construction of Transition. When the simulation was first piloted the experience for all participants, including the simulation

leader, consisted of numerous transactions with selected displays as well as numerous social interactions. Figure 3 is an attempt to represent the manner in which the Johnson-Aoki Curriculum and Instructional Design Model was adapted by the simulation development team as they were involved in the process of instructional planning.

## THE SIMULATION MODEL

The first of many regular weekly meetings of the development team took place on October 24th, at which time it was recognized that the core of any simulation is the basic model. At this initial developmental stage it was decided to use the method of inquiry postulated by Charles Morris (1964) as the basic model for Transition. According to Morris, inquiry is a 'reflective process involving signs and directed to solving a problem (p. 26). Morris identified three types of inquiry: designative inquiry, which deals with problems of what has happened, is happening or will happen; appraisive inquiry, which deals with problems of what should be or what to accord preferential behavior; and prescriptive inquiry, which deals with problems of what should be done.

At any stage of a problem solving situation, inquiry is never solely designative, appraisive or prescriptive. Rather there is always a designative, appraisive or prescriptive thrust. At any stage in solving a problem there is always a predominant mode of inquiry and supportive modes of

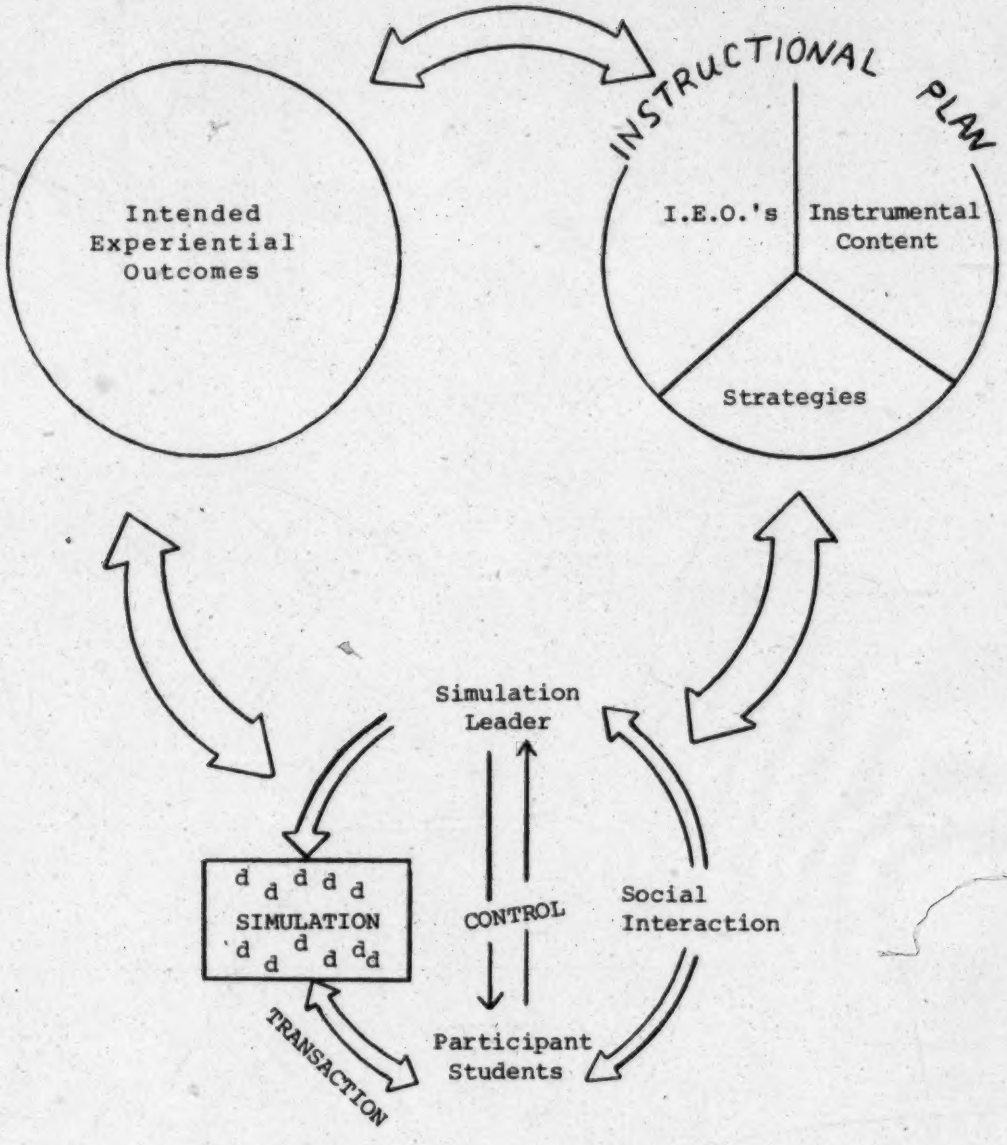


Figure 3

An Adaption of the Johnson-Aoki Model

inquiry. Figure 4 depicts the possible configurations.

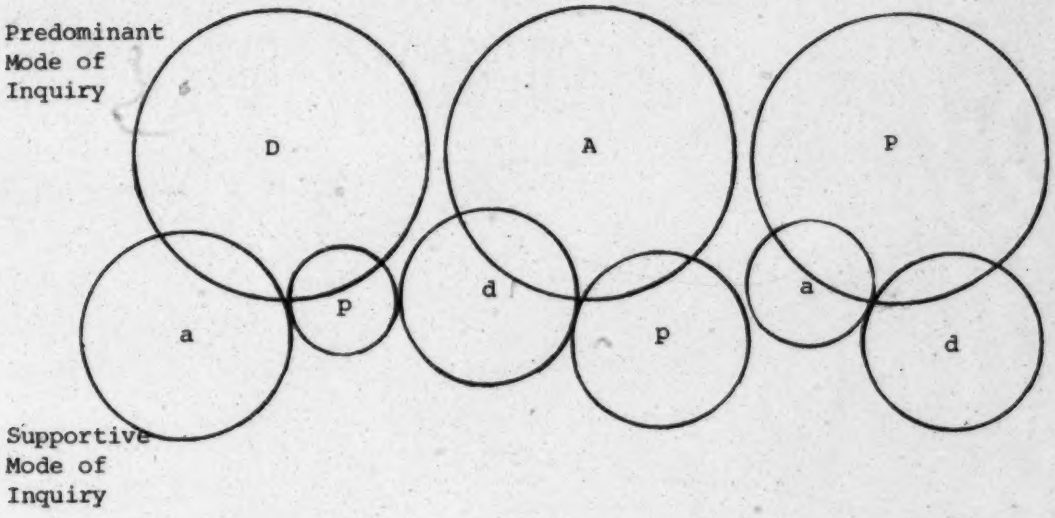


Figure 4

Three Inquiry Configurations

(Aoki, 1971; Sterk, 1971, p. 33)

In order for an inquirer to ask prescriptive questions, for example, he must have determined the existing qualities of a situation and must have decided that a more desirable state was needed.

Morris' method of inquiry was incorporated as the basic model of Transition. In the context of the simulation, participants would engage in inquiry which had a designative thrust when they examined their present situations as defined by role cards, information booklets and other resource materials. Participants would engage in inquiry which had an appraisive thrust when they examined what they wanted to have happen in the simulation and made a decision as to the major and specific goals they would try to achieve. Participants would engage in inquiry which had a prescriptive configuration as they inquired into the means to achieve goals in given situations. From the very outset the development team perceived simulation participants as inquirers in an environment organized to simulate some of the major problems of Canadian families in transition from rural to urban or urban to rural centres.

As well as a structured inquiry process, the development team recognized another crucial component in the simulation, namely error control. The developers viewed error control as a stage of evaluation designed to analyze goals and actions taken to achieve goals so as to facilitate better decision-making. In Transition participants would be forced to make decisions that would involve either moving from their present locations to other communities or remaining in their present locations and adjusting their goals. In the initial stages of development the team recognized the

importance of including opportunities for debriefing at selected stages of the simulation activities. During these intermediate and final debriefing rounds, participants would be given opportunity to verbalize their experiences and organize those experiences for subsequent rounds of decision-making.

## THE CONSTRUCTION OF THE TRANSITION SIMULATION

Once decisions had been made regarding the basic model and component processes to be incorporated into Transition, the development team began the slow process of research and investigation of information that had the potential for simulation displays. Formative evaluation became an important part of this developmental process as the developers explored and continually revised materials and ideas.

One of the early tasks was the identification of family types (ranging in size, membership age, ethnic and religious composition), occupations, housing facilities and communities (varying in size and life styles) which would be representative of the diversified Canadian ways of life. Then began the month long process of research into the selected subsystems. During that time many provincial government agencies, including Departments of Education; Culture, Youth and Recreation; Industry and Commerce; Regional Services and Building Development were frequented in efforts

to procure as much information as possible relative to the variations in economy, education, government and recreation across Canada. Responsibility for information gathering was shared among team members. Regular weekly meetings were held during which time materials were presented, scanned and organized for possible inclusion in the simulation. These early stages of development reflected an open, flexible atmosphere where all suggestions as to how to incorporate the vast amounts of information gathered into the simulation were considered. Indeed it was such an open atmosphere within the team which facilitated the necessary formative evaluation during the developmental process.

During the third month developers were preoccupied with visits to Statistics Canada for information on population and living conditions. Letters were written to the Department of Urban Affairs as well as to specific community government centres requesting information on community life. During this stage, five communities were selected to represent varied Canadian community life styles in the simulation. The University of Alberta libraries were scanned for printed materials on the theme of urbanization. The Curriculum Materials Centre was a locus of activity as outline maps for agriculture, industry, climate, transportation, and natural resources were prepared. First term activities ended with a December meeting of the entire SURT team at which time the goodness of fit between the products of the two development

teams was the focal point of discussion.

It was not until the fourth month of the developmental process that the specific intended experiential outcomes of the simulation were identified and formulated. This was a definite reflection of the unstructured inquiry process which had characterized the development team as members "muddled through" materials. A deadline of April 30th was set by which time simulation materials had to be ready for piloting. The developers then undertook the task of simplification of materials relative to the four subsystems in the five selected communities so as to be meaningful to students of secondary school social studies and usable within a simulation context. Considerable time was spent planning the many ways that materials could be displayed so as to involve simulation participants and encourage extensive transaction.

In the sixth month decisions were made as to the means of building extensive participant interaction into the simulation as well as the win-loss factor and resource units. Among the issues discussed at this stage were the pros and cons of competition and cooperation in the simulation and the advantages and disadvantages of fictionalizing simulation materials. In the seventh and final month of development all materials were translated into fictional terms. Regional and community profiles were again subject to formative evaluation as were the role descriptions. Actual simulation

activities were delineated. In the final three weeks the developers shared the responsibility of printing and reproducing all simulation materials in readiness for the first piloting.

The development of Transition in its first draft involved seven months of teamwork. Regular team meetings consumed 165 hours with at least that time again devoted to the research and investigation of materials by each team member. Throughout the entire developmental process the simulation development team was engaged automatically in formative evaluation as team members shared ideas among themselves, the entire SURT team, among consultants and those not directly involved.

## SUMMARY

This chapter attempted to indicate the context within which Transition was developed, the model used to construct the simulation, the basic model incorporated into the simulation and the procedure used in the actual construction. Transition was developed as part of the curriculum package of Project SURT. It was specifically designed for Canadian students of secondary school social studies. The development of the simulation came under the category of instructional planning, specifically the activity of designing instrumental content. The display function of instructional materials was considered especially important to the development of

Transition.

The basic model incorporated into the simulation was the method of inquiry postulated by Charles Morris. As well as a structured inquiry process, the process of error control or debriefing was built into several stages of the simulation activities. From the initial to the concluding stages of the developmental process, the process of formative evaluation was an on-going one. Product information was continually fed back into the developmental process for the purpose of improving the product.

# CHAPTER 4

## FORMATIVE EVALUATION

The present investigation was designed primarily to be a formalized formative evaluation of a simulation. Development of any instructional content and teaching strategies necessitates that some complementary process of evaluation occur during the developmental stages. Such formative evaluation is indeed crucial to the process of development and at least equals the importance of empirical evaluations of finished products. Indeed, formative evaluation is a continuing process from the initial stages of the developmental process. There is also, however, an important place for a more formalized evaluation* during the stages of development.

This chapter deals specifically with the manner in which the conceptual scheme for formative evaluation presented in Chapter 2 became formally operationalized during the development of Transition. This chapter is divided into the following sections:

1. Formative Evaluation: Preactive Phase
2. Formative Evaluation: First Interactive Phase
3. Formative Evaluation: Second Interactive Phase
4. Formative Evaluation: First Postactive Phase
5. Summary

*Henceforth referred to as formative evaluation.

## FORMATIVE EVALUATION: PREACTIVE PHASE

The goal of formative evaluation is not to compare one product or strategy with another but rather to discover deficiencies and successes in the intermediate versions of instructional content and strategies. The basic question for which the investigator had first to find an answer was how to discover the deficiencies and successes of Transition. It was decided at the outset that the logical though often neglected focus of an investigation of Transition in its formative stages of development should be a description and assessment of the process dimension of the simulation. It appeared most worthwhile to focus on the simulation participants as they transacted with the simulation display and interacted in decision-making. It was felt that such an investigation would provide the most feedback into the developmental process in order to enable the development team to make necessary revisions.

The investigator felt that there were three basic components of Transition, each worthy of formative evaluation in its own right: a) the simulation model; b) the sequence of operations, and c) the scenario of materials. In recognition of the simulation model being the core of Transition, the investigator considered it a fundamental role of the evaluation to provide cues to indicate whether or not the Transition model had validity and integrity. The Transition model was recognized to include both the decision-making model, the method of inquiry postulated by Morris, and

the system's model, the SURT Community Systems Model. The test for the validity of the decision-making model involved a major question. Do participant students use the inquiry model in any discernable way and find it helpful in making decisions without any formal introduction to it? The test for integrity of the SURT model involved another major question. Does the model allow a flow of actual and potential data in the manner which approximates the real world system being simulated?

A second evaluation component was recognized to be the sequence of activities or the activities in which Transition participants would be engaged. It was recognized at the outset that if students at the secondary school level were unable to perform the activities of Transition then the task components had to be revised and/or resequenced. The investigator considered another important role of the evaluation study to be the identification of simulation materials which were incomprehensible or which did not allow opportunity for in-depth student involvement in decision-making.

The investigator entered the study fully convinced of the need for an examination of the actual simulation process as a means of determining what students do when they are involved in a simulation rather than what they have learned. The ethnographic approach was chosen over statistical, psychometric approaches as being more significant and of greater value in the achievement of the goal of the

formative evaluation, namely the identification of aspects of the Transition model, activities and materials which needed reworking and revision. It was felt that the ethnographic approach might provide more knowledge about the intricate transactions in the classroom setting than a traditional statistical research approach. In this sense the study was viewed as an exploration into the feasibility of the ethnographic research approach as a means of formative evaluation.

Of immediate concern to the investigator during this preactive stage of formative evaluation was the question of where and when the first major piloting would take place. Which classroom situation would provide the most feedback into the developmental process? The decision was made to involve a class of the active teacher member of the simulation development team. It was felt that this would be an ideal situation for the discovery of "major bugs" in the first draft of Transition. The teacher-developer, with her experience in simulations in general and active involvement in the development of Transition, would be able to recognize immediately some of the major deficiencies and successes in the first draft and provide immediate and direct feedback to the development team.

At the same time it was recognized that teachers not involved in the developmental process would be another important source of feedback information. They would be less

likely to develop tunnel-vision and be in positions to identify strengths and weaknesses in the simulation which a developer might overlook. It was thus decided to have three teachers not involved in the developmental process pilot Transition in their social studies classrooms. Their openness to unanticipated problems and side effects would be of special value in providing feedback to the development team.

The class selected to participate in the first major piloting of Transition was considered by the investigator as a unit of analysis for an ethnographic study. The study attempted to determine both the inside view of participants as they transacted with the simulation and also the outside view of those not directly involved in the actual simulation experience. Numerous data sources were chosen to comprise the ethnography in order to provide as much feedback as possible. These sources of feedback included:

1. Direct observations by the participant observer, the classroom teacher and member of the development team,
2. Direct observation by two non-particpant observers, the investigator and the third member of the development team,
3. Audiotapes of the verbal behavior of selected participant student groups during selected segments of their simulation experience,
4. Videotapes of the verbal and visual behavior of selected participant student groups during selected

segments of their simulation experience,

5. Recorded interviews with six participant student groups immediately after completion of simulation activities,

6. A questionnaire administered to all participants following their simulation experience,

7. Classroom documents including student work sheets, goal setting sheets, and satisfaction assessment sheets.

The extensive nature of the study called for careful and detailed preparations. The development team first drew up a concise Time Line of Simulation Activities (Appendix C). This time line proved crucial for the identification of segments of activities to be video and audio-taped. The time line also facilitated the preparation of a Participant and Nonparticipant Observation Sheet (Appendix A) on which the simulation leader and non-participant observers were asked each day to describe each simulation activity identified on the time line as they witnessed them. Observations were made in terms of the simulation leader activities, the participant student transactions and interactions, and particular simulation displays. Observers were also asked to record their judgements as to successes and deficiencies in the simulation as soon as possible after each day's activities.

The use of video and audio equipment in the study also called for careful planning. Consideration had to be

given to the classroom setting and the positioning of participant groups for the piloting. Decision was initially made to use the regular classroom setting so as to reduce the possibilities of the Hawthorne effect serving as a source of contamination of the study. It was also decided to position participant groups so that the administrative groups would be located at the classroom extremities and the resident groups would be in the classroom centre. Figure 5 presents the classroom arrangement decided upon for the simulation piloting.

Such an arrangement appeared to offer the following advantages. Extensive interaction between resident and administrative groups could be facilitated when administrative groups were positioned on the outside and separated from each other as much as possible. Having resident groups in the centre would encourage interaction among residents although such interaction was not specified as an essential part of the simulation activities. This arrangement also would facilitate video and audio-taping during selected segments of the simulation experience.

Permission having been granted for the study by the Edmonton Public School Board and the co-operating school, the decision was made to involve one particular grade nine class whose timetable allotted three consecutive double periods (480 minutes over three days). It was felt that such a distribution of class time would be least detrimental

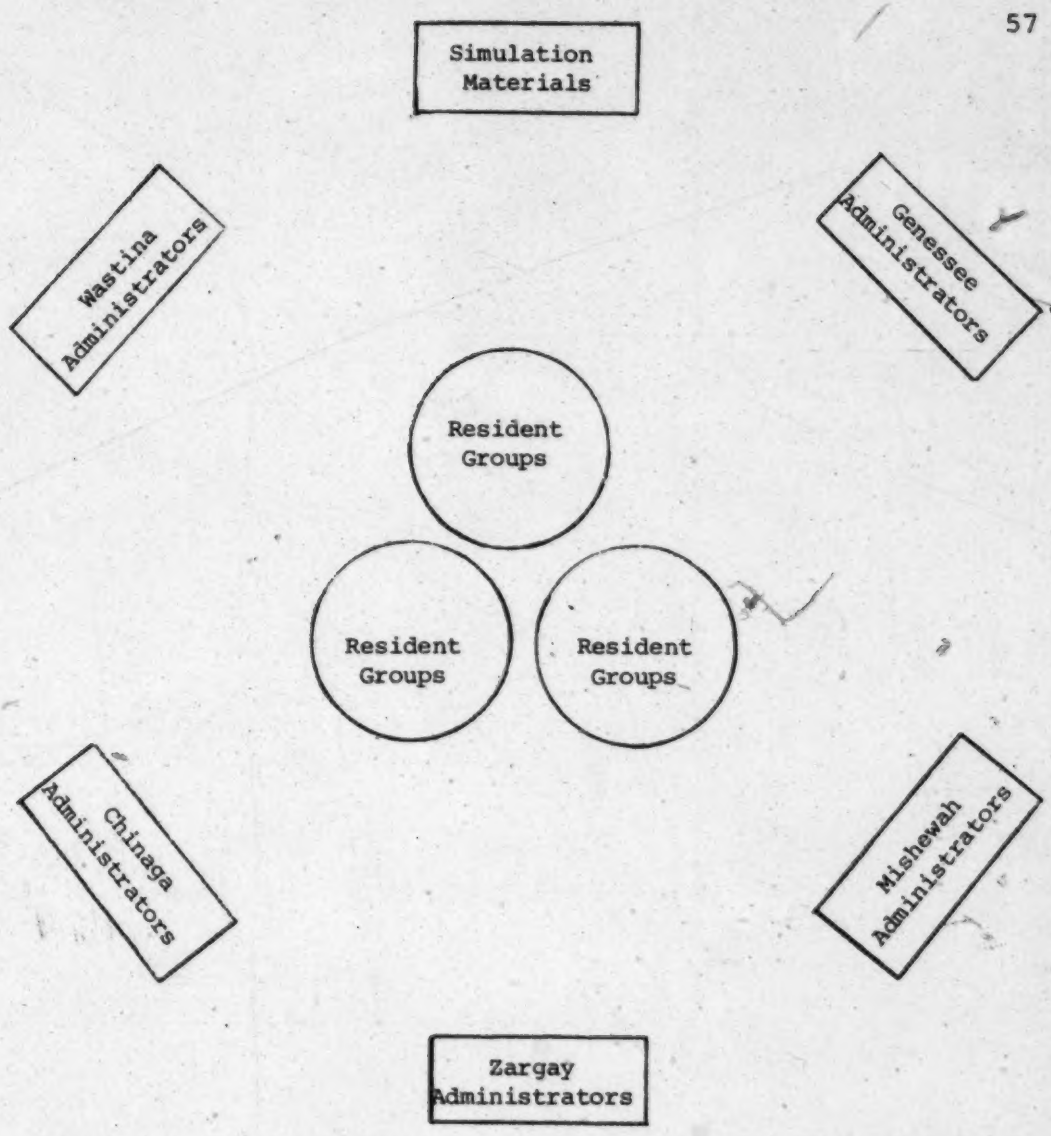


Figure 5

Classroom Setting For Major Piloting

to the continuity of the simulation experience. The teacher-developer's own experience with simulation pilotings proved of tremendous assistance for the investigator at this and other stages of decision-making.

May 15, 16 and 17, 1974, were chosen for the major class piloting. These dates ensured that the simulation materials would be printed in time and guaranteed little interference with the class's regular social studies program. Having the piloting in May also avoided conflict with school examinations and year-end activities. Because the three selected days were so crucial to the revision process, it was decided by the development team that an initial testing of video and audio equipment and basic simulation activities was essential. The feedback from this testing is reported in the next section.

## FORMATIVE EVALUATION: FIRST INTERACTIVE PHASE

The first student transaction with the simulation occurred at Vernon Barford Junior High School, Edmonton, on Saturday, May 11, 1974. Eleven volunteer grade nine students who were not members of the class chosen for the major piloting were involved in this initial testing of simulation materials and recording equipment. The students, four boys and seven girls, divided themselves into two groups. Five volunteered to play the role of administrators and each of the remaining six agreed to represent a resident family. The majority of these students had maintained above average

achievement throughout the school year according to the teacher's evaluation. They were all considered especially co-operative students and involved in all school activities.

Most of the basic activities of Transition were carried out during the initial testing. A brief fifteen minute introduction describing the history and the purpose of the simulation was given. Students drew role cards and spent an hour reading materials in order to gain familiarity with roles and goals. Students were asked to make notations of any materials and procedures which were difficult to comprehend. A ten minute round of information gathering and fifteen minute intermediate debriefing session were conducted. Following a forty minute lunch break, all participants underwent another round of information gathering and made at least temporary decisions. As time would not permit any further rounds of information gathering and decision-making, the activities concluded with a twenty minute final debriefing.

Transition: Feedback from First Interactive Phase

The following are selected segments of the interaction which took place during the initial testing and which provided cues for determining successes and deficiencies in the first draft.

First Segment: Intermediate Debriefing

Simulation Leader:

> What I would like to do now is to discuss in the next few minutes some of the things that generally happened

during that second round of information gathering. I noticed some interesting things happening around the community of Mishewah and I'd first like to ask Sandy what she observed as people came to her for information.

1st Student Administrator:

I felt that in the second round people would be quite detailed with their questions. In the first round all they really wanted to know was how much money they could get in Mishewah, and in the second round they wanted to know the type of living that was in Mishewah and the kind of life and the things that people look at after they've got the job problem mainly figured out.

Simulation Leader:

How did you handle your information?

1st Student Administrator:

The community is lacking in some of its details but then every community is. And so I decided I'd focus on the best parts of Mishewah and I think that that's really the people and the atmosphere and that the cost of living is less. And people can have a really good time in Mishewah because it's small and they get to know each other better.

Simulation Leader:

That's a very interesting thing to have happen, and I'd like to know--I don't know if this will make the administrators feel uncomfortable--but I'd like now to see what your impression was of the administrators. Sharon's community, although she probably didn't tell anybody, is decreasing in size. That means that people are deciding to move out of Mishewah for some reason or another and yet she seemed to be able to persuade people to come there. On the other hand, Chinaga, which is growing . . .

2nd Student Administrator:

It's losing and nobody's coming . . .

Simulation Leader:

. . . Robert wasn't able to persuade anyone. And the big powers are of course the cities--although Wastina has had her problems losing population--and they should have attracted a lot of people. Indeed someone decided to stay in Genessee, someone decided to stay in Zargay.

I'd like the resident groups to rate what you saw in the administrators.

1st Student Resident:

I figured out that when I went around and talked to the other people, they weren't as persuasive as some of the other people were. It seemed like in Genessee they had a pretty smooth talker and he kind of talked you into it. I went around to the other places and the job opportunities weren't as good so I decided to move there.

2nd Student Resident:

Genessee was kind of persuasive because he knew his facts and everything, but it wasn't always on what people told you but on what you wanted before you went there.

Simulation Leader:

You decided that you would go to Mishewah. What did you observe about the administrator?

2nd Student Resident:

She wasn't as persuasive as Rick there but she knew what she was talking about. She didn't tell me everything.

Second Segment: Final Debriefing Session

Simulation Leader:

In this simulation we have tried to build in a method of inquiry, a method of decision-making. And that method of inquiry involves three types of questions. The first question you ask yourself is "What is?" or What do I have now? What do I think I'll have next year?" The next question you ask is "What do I want?" In order to set your goals you decide what you would like. And finally you ask the question "What should I do to get what I want?"

That's not an adequate explanation of the inquiry process, but I was wondering if anyone found himself thinking in terms of those three processes. And particularly the administrators, I'd like you to volunteer to say whether you thought people were asking those three questions.

3rd Student Resident:

I was looking for a job opportunity as a baker

because the one that I have now didn't pay enough to support my family.

Simulation Leader:

Sounds good, now what did you do?

3rd Student Resident:

Well, I went around to the different administrators asking them about job opportunities and income rates with jobs. They told me about different jobs they had and how much they paid, and I told them I would come back later.

Simulation Leader:

All right. Did you make a decision?

3rd Student Resident:

Well, I went to two of the administrators and one of them was in the place I am living already. And the third one I went to was Zargay and they had what I wanted . . . . So I decided I would move to Zargay to get the better job.

Simulation Leader:

I'd like one of the administrators to describe what he observed.

3rd Student Administrator:

Some people were really organized in their questions. Sandy came and she had a list of questions about what she wanted to know about each area, and she would sit down with her notes and make a decision quickly. She knew what she was after. Most people would come with one question and get an answer and then they'd go and ask other people. Then they'd come back and ask another question when they could have had all their questions written out.

Simulation Leader:

O.K., that could have been the result of my directions. But when they would come, did you find yourself asking them questions?

3rd Student Administrator:

Well, a lot of them didn't know what they were looking for, and you had to ask them what their old job was,

what they were trying to get, what facilities they were looking for. A lot of people, even when you asked them, had to go back to their desk and check it out and come back later.

Simulation Leader:

What about the 'should do' questions? Did you help them with that?

3rd Student Administrator:

Yeah, well a lot of times there was a job where they couldn't quite meet the qualifications but there were educational facilities. So I advised them that they should get further education and then meet the qualifications for the jobs.

These selected segments contained many cues for determining some strong and weak points in the simulation model, sequence activities and scenario of materials. The following conclusions were drawn after the initial student transaction with Transition.

1. The first selected segment, the intermediate debriefing, strongly suggested that the simulation materials had the potential for in-depth student involvement. The 1st Student Administrator appeared to understand her community information and made the decision to focus on the good points of her community in order to attract residents, in particular the friendly community feeling. Other administrator groups went about reaching the same goal in other ways. It appeared that the administrator materials offered a variety of alternatives for handling information and making decisions. The alternatives appeared realistic and manageable to those

administrators who participated in the initial testing.

2. The reports of the 1st and 2nd Student Residents indicated that the simulation allowed for extensive and involved role playing. Administrator Materials immediately enticed some students who became actively involved in persuasive techniques.

3. The 2nd Student Resident report during the final debriefing really brought home the importance of goal setting. She saw her goal as being as influential as the smooth talk of administrators in her making a final decision. This gave some indication that the methods of inquiry incorporated into the simulation model were logical and workable.

4. Although only two rounds of information gathering were conducted, the participant students evidenced no serious problems in performing the sequenced activities of the simulation. The initial testing did indicate that some of the major activities would take longer than originally anticipated during the major class piloting. Since time did not permit student involvement in compuation of scores, no cues were provided by the initial testing to determine if the mathematical formulas were complicated and time consuming.

5. The second selected segment gave strong indications that participants were indeed using the inquiry process of Transition's decision-making model in a discernable way. It was most interesting to observe the

administrators using a structured inquiry process rather than an unstructured muddling process even though the simulation did not structure their means of handling the information presented. Developers interpreted this as a sign that the simulation model was valid. Both resident and administrator groups found the model a logical one to use when faced with a problem. Reports of both the 3rd Student Resident and the 3rd Administrator revealed that their inquiry process had moved from a designative, to an appraisive and prescriptive configuration as they proceeded to solve their very different problems of attracting more people on the one hand and finding a better paying job on the other.

6. What was evident during the initial testing was extensive enjoyment and satisfaction among the partipants as they set personal goals and tried to achieve them. These observations could have been attributable to the particular student personalities, the novelty of their simulation experience, and the simulation materials themselves.

7. One of the major problems identified as a result of this initial testing was the inadequacy of the regular classroom. Even with only eleven participating students the classroom was overcrowded due to the space taken up by the recording equipment. This rendered the use of the regular classroom impractical if not impossible for

the major piloting the following week with a class of thirty students. Arrangements were made immediately after the initial testing to use the school library for the major class piloting.

## FORMATIVE EVALUATION: SECOND INTERACTIVE PHASE

The second group transaction with the simulation took place at Vernon Barford Junior High School on Wednesday, May 15th; Thursday, the 16th; Friday, the 17th, and the following Wednesday, May 22, 1974. Twenty-eight students of a grade nine class were involved in this major piloting. The students, fourteen boys and fourteen girls, were assigned to groups of two by the simulation leader. Five of the pairs were appointed to the administrative roles and the remaining nine pairs selected role cards which assigned them to resident family roles. The majority of these students had maintained average achievement throughout the school year and were considered by the teacher-leader as "the best grade nine class in the school" because of their co-operativeness and overall enthusiasm.

All intended simulation activities were carried out because the major piloting was extended into a fourth day. On the first day an extensive introduction was given by the simulation leader in her description of the development and purpose of Transition. The role of the student in formative evaluation was emphasized. The meaning of

simulation was explained via use of the overhead and transparencies which compared simulations with athletic games. The fictionalized communities and regions were described with reference to a wall map. The types of groups, roles and general requirements of participants were explained. Fifty minutes were devoted to this introduction which was mainly leader dominated. Opportunity was provided for student questioning and interaction.

Participant manuals were distributed and students spent twenty minutes reading them. Specific activities were clarified by the simulation leader with reference to the manuals. Students then drew role cards and assumed class positions. The remaining hour was allotted to reading of information packs. During this time resident groups also completed work sheets and set goals. Administrative groups set goals and prepared for their class presentations to sell their respective communities.

On the second day, all five administrative presentations were conducted. The activities of the preceding day were reviewed by the simulation leader. Two ten minute rounds of information gathering were carried out, each followed by intermediate debriefing sessions. Ten minutes were devoted to the clarification and re-evaluation of goals.

The third day's activities focused on two additional rounds of information gathering and debriefing. The point system was clarified by the leader and one hour was occupied

by students as they wrestled with the simulation's mathematical computations. Activities for this day ended with all resident groups having made final decisions.

During the extended fourth session, all participant groups made class presentations in an attempt to describe what happened to them during their simulation experience and to communicate their credit and satisfaction point assessment to the class. As each group made a presentation, three students were designated to evaluate the group in terms of the realism of their assessment. Group evaluations were followed by a general class discussion of what happened throughout the entire four day experience with particular reference to the simulation model, activities and materials. Questionnaires were distributed and returned to the leader the following day. Interviews with twelve participants were conducted immediately following the conclusion of simulation activities. In all, seven hours were required for the completion of all activities. The entire simulation experience took place in a carpeted open area of the school library.

## FORMATIVE EVALUATION: FIRST POSTACTIVE PHASE

The first postactive phase of formative evaluation began with an analysis of ethnographic data obtained during the major class piloting. In the following section is presented a summary and analysis of data gathered from three

sources: participant interviews, questionnaire and participant worksheets.

Interviews

Immediately following the final simulation activity of the major pilot study, interviews were conducted with six participant groups. Three resident groups were interviewed by a developer-observer. Because of technical difficulties with recording equipment, these interviews were confined to a twenty minute period. Three administrative groups were interviewed by the investigator over a forty-five minute period. Both interviewers had had previous direct contact with informants during the seven hours of observation of their simulation experience.

Interviews were conducted from an ethnographic perspective. Each participant group was viewed as a cultural scene by virtue of the two members' common experience with a specific simulation role. Both members of the group were viewed as sharing information which defined their common experience. The interviews were an attempt to determine the extent of cognitive sharing of goals, plans and rules during the simulation experience and to explore the reactions of participant groups to that experience. The interviews represented a means for an examination of simulation activities from an inside student perspective as distinct from the outside view of participant and non-participant observers.

Inquiries conducted with participant groups were unstructured. Interviewers entered into dialogue with participants with foreshadowed problems in mind. These included the following:

1. The extent of co-operation within and among groups.
2. The extent to which materials and activities were difficult and confusing.
3. Participant attitudes to the inquiry process of the simulation model.
4. The degree of satisfaction and enjoyment of participants.
5. Participant perceptions of the overall experience.

These problems served merely as a guide. The actual categories for discussion were based in part on the informants' experiences rather than totally on preconceptions of the interviewers. Cues for further discussion were picked up from informants themselves as the interviews progressed.

All interviews were tape recorded and then transcribed. Transcriptions were analyzed in order to determine participant perceptions of and attitudes to their simulation experience. The following are selected segments which were especially significant in providing the investigator with insight into the manner in which grade nine students engage in role playing and decision-making and in providing the development team with cues for further simulation revisions.

Segments of Interview with First Administrative Group

Interviewer:

Did you at any point find the simulation difficult or confusing?

Informant 1:

Well, at the first when we read the information, I didn't really understand the whole thing but later I understood it. At first I thought it was going to be boring but later I found it to be fun.

Interviewer:

Do you think you might be involved in real life with some of the kinds of decisions you made in the simulation?

Informant 2:

I think you have to think of moving. Getting a house, better wages, a better district--you have to look at all the possibilities in moving. I think when people consider moving the first thing they consider is the job and salary. But almost everything is important.

Interviewer:

Do you think the model for the simulation presents a good method for problem solving?

Informant 1:

I think so because this method helps you consider all the things, all the alternatives. If you consider all the alternatives then you could probably come to better conclusions. I think that Mrs. Sterk should have stressed the problem solving method at the beginning moreso, and then people would have been realistic in their goals. Some weren't realistic in their goals. At first when we were writing our goals I didn't really know and understand what we were supposed to write down.

Interviewer:

Do we always make decisions that way? Do we always look at all the alternatives?

Informant 2:

No. A lot of times we never do. A lot of times

there are things which I don't think are important but which really are. Basically if you see one thing you like then you don't go searching for other possibilities; you are satisfied with that.

Interviewer:

When we're making decisions, are we influenced just by facts or by other things as well? Are we influenced just by information or also by the people who convey the information?

Informant 2:

I think we're basically influenced by people. You know, if they sound really good, sometimes they suck you in.

Interviewer:

Can you think of examples in your own life?

Informant 2:

Yes, my decision to baby-sit. I really don't like baby-sitting but when they say in a nice voice "I really need you" it is sort of difficult to say "no".

Interviewer:

You know the trend in Canada is for people to move to the larger cities and not communities of four thousand people like yours. I really wonder if it was the material or if it was your effort that you put into it.

Informant 1:

Well, we tried to satisfy everyone. People didn't really look at what the present population was. They kind of were just looking for their needs. If we did it again people would watch more carefully what they were looking into, like inflation rates, etc.

Informant 2:

I think it was really luck. I don't think we were too hot in selling the stuff but we had a pretty good community. We could have probably done better in selling it.

Interviewer:

I was interested in your handling of the situation

the first day. One group stayed with you the whole time, the whole ten minutes and yet you didn't seem worried. Why not?

Informant 1:

We weren't really concerned about getting numbers. We wanted to make sure that the people who came to our community were those who knew all about it and really wanted to come . . . . If you spend more time with people then you might convince them whereas if you spend a little time with everybody, then they might not be too impressed. We weren't really concerned about getting a lot of people. We let people stay with us until they had all the information they wanted.

Interviewer:

Did you feel at any time over the four days that you were competing with the other administrators?

Informant 2:

In a way you did, because when people came they would say "We can get this much in this place. What can you offer?" You had to try to beat that. But one group decided to move to us even though their salary was lower. We had other advantages.

Segments of Interview with First Resident Group

Interviewer:

What do you think about the game? What needs to be changed?

Informant 1:

I'd say the introduction was off, like you would get lost in the introduction and wouldn't know exactly what was going on.

Interviewer:

Did you find anything difficult about this game?

Informant 2:

The jobs. There just wasn't one that suited us perfectly.

Interviewer:

Do you think this is the way life is?

Informant 2:

Yes, I guess it's hard to find the perfect job.

Interviewer:

Would you do anything differently if you were to play the same role again?

Informant 1:

I think we would do some things differently. We would find out much more about the city. Like we were just looking for jobs but we weren't really thinking too much about social things and cultural stuff.

Interviewer:

What do you think the purpose of this game was?

Informant 2:

That's what I didn't get, the purpose of it all. I didn't see why we had to do it.

Interviewer:

Do you think it helped to teach you how decisions were made?

Informant 2:

I just answered the questions and I don't think it helped me. I enjoyed the game and found it interesting.

Interviewer:

What was the most difficult part of the game for you?

Informant 1:

The rules were a bit confusing at the beginning. When the teacher explained the rules in the first round no one really knew what they were supposed to do and what questions to ask. Maybe the teacher should give some examples when going over the rules. Rules should be more defined and better explained.

Interviewer:

Do you think this game will help you in the future?

Informant 1:

It shows you that you should look for everything in a community and not just one specific thing because then they could be lacking in another one.

Interviewer:

What do you think the main purpose of the game was?

Informant 1:

I don't really know what it was.

Segments of Interview with Second Administrative Group

Interviewer:

Do you think the game is realistic?

Informant 1:

There was a lot of chance involved. In real life there is more control over certain situations. We couldn't make any deals like some businesses do in real life. We would like to have been able to do more with the materials. In Mishewah the jobs were all low salary. What we had couldn't really help any one the way things were. I don't think that Mishewah fitted into anyone's real plans.

Interviewer:

What were your goals?

Informant 2:

To get people to come to our community and give them nice jobs.

Interviewer:

Any specific jobs?

Informant 2:

To see as many people as possible.

Interviewer:

Did you change these goals in any way?

Informant 1:

No. We stuck to them.

Interviewer:

How did you go about trying to achieve your goals?

Informant 1:

Well first the speech, and to try and make things sound as good as possible. We deliberately selected bits of information. If we had told them the truth that would have killed it right there.

Interviewer:

What about the method of decision-making? Is it a good approach to solving problems?

Informant 1:

Well I would have to say that it is a logical approach to solving problems but . . . . It is a basic way to start looking at things. Let's say that the real estate agent wanted to sell something, then he would look at what was and then what he wanted.

Interviewer:

Were you satisfied with what you had done even though you didn't achieve your goals?

Informant 1:

Yes. I think we did just about what anyone could really do.

Interviewer:

Did you feel competition?

Informant 1:

Yes, right off the bat! Constantly trying to shuttle people back and forth. Sometimes I had to remind myself that it was just a game, that it wasn't all that serious.

Interviewer:

Would this help you in the future in any way to make decisions?

Informant 1:

This would make me more wary of administrators. Now I know how they operate.

Interviewer:

When we make decisions are we just influenced by factual information?

Informant 1:

I think people are sort of trained today to forget about advertising and look basically at what there is--facts.

Interviewer:

Do people play a part in your everyday decisions?

Informant 1:

Someone has to be there to tell you about it. Slight endorsements do influence you a little bit. Some people are gullible.

Interviewer:

Were you bored at any time over the four days?

Informant 1:

I was always engaged into it and working at it. Materials were easy to work with.

Questionnaire

A total of thirty-nine copies of a questionnaire (Appendix B) were distributed to all participants of both the initial testing and major class piloting. Twenty-three of these were returned to the simulation leader and forwarded to the investigator. Results of the questionnaire were

tabulated and analyzed. The following student feedback was obtained:

1. Twelve students felt that the simulation should have been longer while nine were satisfied with its original length and two felt that the simulation was too long.
2. The most common suggestions for additions to the simulation were:
    a. a better explanation of what the game is all about (7),
    b. the use of examples during the introduction (7),
    c. longer interaction rounds (7),
    d. a more realistic balance of good and bad in each community (2),
    e. a package of materials for each administrator (2),
    f. more power for the administrators, such as paying moving expenses or giving a month's free rent (5).
3. The great majority of participants felt that nothing should be deleted from the game.
4. When asked via a checklist to identify those things which were difficult and easy to understand, students reported the following:

| | | Difficult | Easy |
|---|---|---|---|
| a. | the introduction | 12 | 9 |
| b. | the background information | 4 | 12 |
| c. | the description of the problem of transition in the world today | 8 | 9 |
| d. | the description of the community systems | 3 | 14 |
| e. | the rules | 4 | 16 |
| f. | the information on my community | 1 | 19 |

| | | Difficult | Easy |
|---|---|---|---|
| g. | my role description | 3 | 17 |
| h. | the worksheet | 4 | 1 |
| i. | the activity of setting goals | 6 | 13 |
| j. | the information which resident groups wanted when they came to me for information | 1 | 7 |
| k. | the information which administrative groups had when I went to them for information | 4 | 10 |
| l. | making a final decision | 2 | 14 |
| m. | the formulas | 16 | 2 |
| n. | the credit points | 12 | 7 |
| o. | the satisfaction points | 7 | 8 |
| p. | the evaluation of my group by others | 6 | 8 |

The obvious problem areas for participants were the introduction and explanation of Transition, the mathematical computations and point system.

5. Nineteen participants found their role easy because the information in the simulation was well organized, precise and understandable and because they were satisfied with the means they used to achieve goals. Three participants who found their role to be difficult cited frustration and failure to attract people and lack of understanding of their role as reasons.

6. Fifteen participants felt they had played their role well because they had carried out the role obligations and had reached their goals. Eight participants felt they had played their role poorly and cited the following reasons:

   a. I didn't know what was happening.
   b. We didn't gain much.
   c. I made a poor speech and loused up the description of my community.
   d. I could have done better with more time.
   e. I wasn't satisfied.

7. Nineteen participants felt that their role was important to the success of their group and cited the following reasons:

   a. Co-operation and gameship are very important for success.
   b. Resident groups relied on me.
   c. People needed someone to convince them.
   d. I informed as many as my partner.
   e. I had some difficult decisions to make.
   f. My goals were clear and well-defined.

   One participant noted that his role was unimportant because he didn't know what he was doing at first.

8. Eighteen students felt that their role required more information so that they could better understand the people they represented and could better communicate their role to others. Five participants found the role information sufficient.

9. Nineteen students felt that their group had an important role to play in the game and noted the following as major reasons:

   a. We had to make real life decisions in this game.
   b. There was room in the game for our opinions.
   c. This game shows what can happen in today's life--decision-making and problems.
   d. We helped people to make decisions.
   e. If we thought it was unimportant we would not have had a success.
   f. Co-operation is necessary for achievement.
   g. We helped persuade and give information.
   h. It was possible for our community to be beneficial to people.

   The one participant who reported his group role as being unimportant did not cite any reasons.

10. Nineteen participants found the simulation to be just

right for their grade level and noted the following reasons:

a. We should start realizing the problems of moving in grade nine.
b. The game shows us some problems of decision-making in today's world.
c. The game requires some skill and a lot of thinking but is not overly hard.
d. The game really makes you think but is still a lot of fun.
e. The game is fun, interesting and taught me a little more about world problems.
f. The game provides us with a challenge.

The two participants who found the game too difficult found the instructions too complicated for their level.

11. Thirteen participants reported being happy with their final decision and equated happiness generally with achievement of goals and helping people improve their situations. Four stated that they were unhappy with their final decision because they were rushed into making the decision.

12. Twenty participants said they would play the game better a second time for the following reasons:

a. I would know what to do and would better understand rules.
b. I would get right into the play faster.
c. I would set different goals.
d. I learned things to improve upon the first time.
e. I would read the information more thoroughly.
f. I would try to be a smoother talker.
g. I would know what others wanted from me.

Three students said they would play the game the same way the second time because they thought they had made the best possible decision under the circumstances.

13. Eighteen participants found the game interesting for the

following main reasons:

a. We had never done this sort of thing before.
b. There were no boring parts in the game.
c. The game provided contact with others and was a challenge.
d. This was much different from what we had done in social.
e. This game showed me what I might face as an adult.
f. This shows what people involved in transition must go through.

One student found the game uninteresting and a waste of time.

The questionnaire concluded with a page on which students were asked to make general suggestions for improving the game. The investigator was very pleased with the number of responses. The following were the most common suggestions offered:

a. Make the information-gathering periods longer or have more of them.
b. Explain the introduction better with use of examples to make things clearer and get students involved right away.
c. Have more people to a group in order to avoid arguments.
d. Have more people to a group to make for better decisions.
e. Don't have any job cards. In real life you would take these things into consideration before accepting a job.
f. Improve some of the communities and have their good and bad points more equally distributed.
g. Make the formulas a lot simpler; simplify credits.
h. Have more people and more cities for a greater choice.
i. Have hidden cameras.
j. Give more power to the administrators.
k. Have an extra round of information gathering after a final decision to make sure that everything is O.K.

Worksheet Summary

Participant worksheets completed on the first day

indicated that the following were the major goals of resident groups:

1. to achieve a feasible lifestyle without causing any major discomforts (1),
2. to get a higher income (3),
3. to have a better job and a better place to live with a higher income (3),
4. to get a quieter living town with the same standard of living (1),
5. to get rid of debts and go to university for a change of atmosphere (1),
6. to have a higher standard of living (1),
7. to find a good clean job (1),
8. to get more of an outdoor life and more money (1),
9. to have a change of scenery and get into a new area (1),
10. to get a better job and a furthered education (1).

Worksheets also indicated that the following were the specific goals of resident groups participating in Transition:

1. to get a better job which pays more (4),
2. to educate my children and allow them to grow up to be well adjusted (1),
3. to get closer to nature and the outdoor life (3),
4. to get out of debt (1),
5. to earn more money for a better quality of life (1),
6. to get good sports, cultural and social facilities (1),

7. to have skiing facilities and a better neighborhood (2),
8. to make more money for better living accommodations and more luxury (1).
9. We want a more secluded, smaller area (1),
10. to keep the family together (1),
11. to get a smaller, cleaner place to live (1),
12. to get into a higher income bracket and obtain a higher class of living (2).

Worksheets also indicated that the following were the major goals of administrative groups:

1. to persuade as many people as possible to live and stay in our community (4),
2. to attract worthy people to reside in my town (1),
3. to obtain the sixty points (1),
4. to attract as many semi-skilled, skilled and professional people to our community as possible (2).

Worksheets also indicated that the following were the personal goals of administrative groups:

1. to see if I am as persuasive as I think I am (1),
2. to promote the beauty and friendliness in my town to people dissatisfied in their present location (1),
3. to raise the quality of government services (1),
4. to assist people in bettering their present situation (1).
5. We would like to tell the truth and nothing but the truth about our community (1),
6. to see as many people as possible, present our case well and convince people to stay here (1),

7. to satisfy as many people's needs as possible (2).

Analyses of Interviews, Questionnaire and Worksheets

Administrative groups were found to be more open than resident groups in both the interviews and the questionnaire. This phenomenon may be attributable to differences in general roles in the simulation. Nevertheless it would appear that some generalizations can be made regarding the extent of cognitive sharing of goals, plans and rules among participants and also the extent of affective sharing of reactions to their experience with Transition. An attempt was made to determine the extent of sharing of the grade nine students in real life decision-making situations although most of the sharing can be generalized only to the hypothetical decision-making situations into which Transition participants were placed. All generalizations are based on informant data gleaned from the interviews with twelve participants, the twenty-three returned questionnaires and the worksheet documents completed during the simulation experience.

While there was no evidence to indicate complete cognitive or affective sharing among all participants, the interviews and questionnaires did suggest general sharing in the following areas:

1. Most resident groups gave high priority to getting a job with a good salary as one of their major or specific goals. Most resident groups also included better recreation facilities in their goals and were especially concerned that communities provided skiing facilities.

2. Administrators generally set their major goal as getting as many people as possible to come to their community. One administrative group, however, decided on the major goal of informing people rather than persuading them. They wanted a few totally committed residents rather than many uncommitted ones.

3. All administrative groups viewed introductory speeches as an important factor in their success in goal achievement.

4. Resident groups generally viewed community size as insignificant and in fact often made final decisions in complete ignorance of community population trends.

5. All administrative groups perceived the deliberate selection of "good points" as a valid way to sell their communities.

6. Administrative groups were generally willing to expend their ten minute interaction rounds with a limited number of resident groups if they so desired.

7. All administrative groups perceived an atmosphere of competition during the simulation experience. Varying degrees of role internalization appeared to account for variations in the extent of perceived competition.

8. There was general agreement regarding difficulty with comprehension of formulas and point systems and the introduction and explanation of Transition.

9. There was general agreement that role descriptions

and community information were easy to understand and that making a final decision was not a difficult task.

10. The great majority of participants felt that they would play their roles better if given a second chance due to their perception of having learned to make better decisions as a result of their simulation experience.

The following generalizations can be made regarding the extent of affective sharing among simulation participants:

1. Groups generally equated the degree of satisfaction and happiness with the extent to which they achieved their goals. All administrators cited helping people improve their situations as the greatest source of satisfaction.
2. Groups generally found the simulation experience an enjoyable one and "a lot of fun" whether cognizant or not of what the simulation was all about.
3. The great majority of participants viewed their role as important to the success of the group in which they were working and the entire simulation.
4. Participants generally agreed that the introduction turned them off temporarily.
5. Most participants found their simulation experience an interesting one. Many claimed that their interest was maintained because the situation was a novel one for their social studies program and because the simulation provided for a continuous sharing of ideas and information among participants.

The following generalizations can be made regarding the extent of cognitive sharing among participants in their real life decision-making situations:

1. Participants generally perceived Canadians as giving most consideration to job and salary when contemplating a transition.
2. Participants generally agreed that such important factors as social and cultural activities are often ignored by those making a transition.
3. Particpants generally agreed that both factual information and people influence their decision-making although there were wide variations in their perceptions of the extent of influence of information and people.
4. Participants generally agreed that it is difficult to find the perfect job that gives complete satisfaction.
5. All administrators perceived the simulation as being able to help them in future decision-making. They perceived the decision-making model as helping them examine all the alternatives.
6. Participants generally agreed that the best decisions are made upon an examination of all the alternatives. There was disagreement as to whether or not they always examine all the alternatives in their own decision-making.
7. There was no sharing of an understanding of the purpose of Transition although a majority did feel that

the simulation might help them make better decisions in the future. Approximately half of the participants described Transition as showing the problems of decision-making in today's world.

8. Participants varied in their perceptions of how realistic Transition actually was. Some felt that there was too much of a chance element in the simulation and not enough control as in real life.

## SUMMARY

This chapter has dealt with the manner in which a conceptual scheme of formative evaluation became operationalized during the developmental stages of the simulation Transition. Four phases of formative evaluation were discussed: the planning or preactive phase, two interactive phases during which students at Vernon Barford Junior High School transacted with the simulation, and the first post-active phase.

In the preactive phase, important decisions were made which shaped the entire evaluation. It was first decided that an investigation of the process dimension of the simulation as participants engaged in decision-making would be the most logical focus for formative evaluation. The ethnographic research approach was chosen as the means of formative evaluation. It was felt that such an approach would provide more information regarding participant

transactions and interactions than the traditional statistical approach to evaluation, and would catch more unanticipated outcomes and side-effects.

Three simulation components were identified as worthy of formative evaluation: the simulation model, the sequence of activities and the scenario of materials. Numerous potential feedback sources were identified. These included direct observations of the simulation leader and non-participants, audiotapes and videotapes of selected segments of simulation activities, post-simulation interviews, questionnaire and classroom documents.

Section 2 of this chapter has focused on a detailed account of the first interactive phase of formative evaluation, an initial five hour testing with eleven volunteer grade nine students at Vernon Barford School. In section 3 has been presented an extensive account of the second interactive phase of formative evaluation, a major class piloting with twenty-eight grade nine students also at Vernon Barford School. This chapter has concluded with an account of the first postactive phase, an analysis of ethnographic data gathered from participant interviews, the questionnaire and participant worksheet documents.

# CHAPTER 5

## SECOND POSTACTIVE PHASE: SIMULATION ASSESSMENT AND REVISIONS

The role of this formative evaluation study was the provision of product information into the developmental process for the purpose of improving the product. The evaluation of Transition assumed a twofold dimension of description and judgement. The simulation was field tested so as to provide decision-makers, the development team, with feedback on the basis of which revisions could be produced.

This chapter focuses on the successes and deficiencies which were discovered in the formalized evaluation of the intermediate version of Transition. It deals specifically with the second postactive phase of formative evaluation, the assessment and subsequent revisions of the three fundamental components of the simulation: the sequence of activities, the scenario of materials, and the basic simulation model in both its substantive and dynamic dimensions. This chapter is divided into the following sections:

1. Transition: Revision of Activities and Materials--Phase 1
2. Transition: Revision of Activities and Materials--Phase 2

3. Transition: Assessment of the Simulation Model
4. Summary

## TRANSITION: REVISION OF ACTIVITIES AND MATERIALS--PHASE 1

The formal process of revision began during the major piloting at Vernon Barford School. On the third day of activities simulation participants encountered difficulties with the Satisfaction Assessment Worksheet. Participants could not comprehend the procedure for self-assessment and class evaluation. The Fry readability formula indicated that the worksheet had a readability index of "college" level. The worksheet was therefore simplified for the final day's activities during which time participants completed the task of evaluation more adequately.

The first revision meeting of the development team was conducted one week after the major piloting. The exigency of this meeting was due to the decision of the SURT team to have non-developer members conduct a piloting of Transition with their grade ten and eleven classes before the end of the school year. At this initial meeting emphasis was thus placed on the identification and revision of major deficiencies in simulation activities. The record of observations of simulation leader and non-participants during the major piloting served as a point of reference for the identification of revisions.

The following initial revisions in simulation activities were made:

1. The importance of goal setting for administrative groups was made more explicit. The major piloting evidenced lack of understanding of "personal goals" on the part of administrators. In recognition of the importance of goal setting, it was decided to include examples of goals in administrative group manuals.
2. Decision was made to add an activity in which resident groups would make an initial class presentation. Presentations by administrative groups had appeared to motivate and encourage immediate and extensive involvement with simulation materials. It was felt that presentations might also motivate resident groups and lead to more efficient rounds of information gathering. Resident group presentations might cue administrators as to specific resident problems that would be discussed during the information gathering rounds. It was decided that resident groups should not reveal their goals at this initial stage of the simulation as this might detract from subsequent interactions.
3. Developers were cued by their observations, participant interviews and questionnaires to give more power to administrative groups. During the major piloting, job and housing draw cards were placed on a large map at the front of the classroom. It was found that administrative

groups had no control over who received their available jobs and living accommodations. It was decided to give administrators the control of resident qualifications for jobs and housing and the draw cards. In conjunction with the allocation of more power to administrators, it was decided to structure their satisfaction assessment activity and final class presentation so that they would have to justify their decisions regarding the awarding of jobs and living accommodations.

4. All formulas were simplified and clarified. The formula for determining variations in housing costs was simplified and activities re-sequenced so that credit points would be determined only after the draw of housing and job cards. Cost of moving formulas were completely eliminated and replaced by the addition to administrative booklets of a table of designated moving costs. An explanation of the conversion factor was included in participant manuals and procedures to determine variations on living costs were simplified. Rules were revised to specify that resident groups were obligated to remain within their job classification. This revision was deemed crucial in order that job alternatives and job placement be realistic.

5. Decision was made to structure all final group presentations. The major piloting evidenced a need for participant group resumés to be substantiated so as to

make class evaluations of each group's performance more meaningful. It was decided to include in participant manuals a description of the final evaluation activity so that participants would be cognizant of their responsibilities during final presentations from the outset of the simulation.

6. Observations of the developers during the major piloting agreed that those groups who waited to gather all their information from all communities before making a final decision appeared to handle their roles best. Nevertheless it was decided not to make one approach to decision-making mandatory. It was recognized that the simulation should not be so structured as to severely restrict freedom of participants. Alternative ways of handling situations were deliberately left open so that all participant groups would be able to decide on whatever means they wished to achieve their goals.

Participant manuals and information packages indicating the above revisions were retyped, collated and compiled for the additional class pilotings.

## TRANSITION: REVISIONS OF ACTIVITIES AND MATERIALS-- PHASE 2

A second series of revision meetings was conducted one month after the major piloting. The following served as points of reference for the development team in their further

identification of revisions:

1. Findings of the participant questionnaire.
2. Transcripts of participant interviews.
3. Audiotapes and videotapes of selected segments of activities.
4. Observations of simulation leader and non-participants during the major piloting.
5. Observations of non-developer simulation leaders during the second series of class pilotings.
6. Observations of an external evaluator of SURT materials during the second series of class pilotings.

The following revisions of simulation materials and activities were made at this stage of development:

1. All simulation materials were simplified and clarified. In the questionnaires participants reported that they were "turned off" by segments of the participant manual which were lengthy and difficult to comprehend. Some participants observed that scenarios were written in a 'university' style. The Fry readability formula suggested that segments of materials had a readability level of "grade twelve". A concerted effort was made to make materials more readable for junior and senior high school students. Grammatical errors and cumbersome wording were corrected. Paragraphs were shortened in the participant manual and information booklets. The explanation of rules and procedures for

goal achievement was simplified.

2. A major revision was made in the participant manual. Observations of the simulation leader and non-participants during the major piloting suggested lack of participant understanding of the relationship between major and intermediary goals. Administrative groups in particular experienced difficulties in setting intermediary goals. The relationship between major and intermediary goals was made more explicit in the manual. The terms "specific goals" and "personal goals" were changed to "intermediary goals". A goal setting model and illustrations of how both resident and administrative groups might apply the model were added to the manual in an attempt to clarify the process of goal setting and the relationship between the two types of goals. The illustrations emphasized the need for intermediary goals to be attained before major goals could be achieved. The manual's explanation of goal setting was revised to point out that goals should be re-evaluated throughout the simulation and could be revised on the basis of knowledge and experience gained subsequent to initial goal setting.

3. Analysis of participant questionnaires and observations of non-developer simulation leaders during the second major piloting suggested occasional inactivity and boredom on the part of administrative groups. It was decided therefore to structure the activities of

administrators. Role profiles were drawn up for administrative groups. Worksheets similar to those of resident groups were developed so as to structure administrators' designative inquiry into their community situations and appraisive inquiry in goal setting.

4. The first major piloting evidenced participant confusion regarding simulation resources. The development team was especially concerned with administrative group inability to gain satisfaction points. The explanation of the point system was thus simplified to include concise definitions of credit and satisfaction points and a step by step account of how points could be attained. In recognition of the affective dimension of decision-making, the point system was revised so that satisfaction points were directly related to goal achievement. A simplified procedure for the calculation of satisfaction points was included in the participant manual along with a description of points being directly based on the extent of satisfaction with goal achievement and with general playing of the role.

5. All piloting of Transition indicated that resident group worksheets were extremely ambiguous and confusing. The fact that participants took more than an hour to complete a scheduled twenty-five minute activity was an obvious cue for revision. The worksheet was thus revised to include the following:

a. a re-wording of all designative questions,
b. a simplified rating of community facilities and opportunities,
c. specification of where information for the answering of questions could be found, and
d. suggestion for participants to assume the role and impose their own value systems.

## TRANSITION: ASSESSMENT OF THE SIMULATION MODEL

An assessment of the Transition model involved an evaluation of the substantive model of the simulation, the SURT Community Model, and also the dynamic model of decision-making as presented by Morris' three stages of inquiry: designative, appraisive and prescriptive inquiry.

The development team's observations of the substantive process of decision-making during the simulation experience suggested that participants were not constrained by the focus on four systems--economic, educational, recreational and governmental--in Transition. Nor was there any indication that other subsystems in the Community Model were completely excluded in the simulation. Participants appeared able to impose their own beliefs and values as well as those of the role they were playing. In some cases, cultural ties, family ties and religious beliefs and values had

a definite influence on the decisions which were made. This was interpreted as a cue that the SURT Community Model upon which Transition is substantively based has the integrity of a system. The systemic model seemed to allow for a flow of actual and potential data in a manner which approximates the community systems being simulated in Transition.

The fact that resident and administrative groups were able to impose their own value systems was evidence that, although the focus in Transition was on four subsystems, other subsystems including the religious, cultural and family subsystems were, at least tangentially, incorporated into the substantive model of the simulation. During the formal revision stage it was decided to include a simplified explanation of the SURT Community Model in both simulation leader and participant manuals.

While this investigation was concerned in part with the integrity of the substantive model of the simulation, a concern of equal if not more importance was whether or not participants in Transition went beyond the study of the substantive nature of community to an actual involvement in the dynamic process of decision-making. Therefore, an attempt was made to determine the inquiry process of participants as they engaged in the solution of problems associated with transition from one community to another.

Observations of the simulation leader and non-participants gave some indication that participants were

using the method of inquiry incorporated in the simulation in a discernable way without having any formal introduction to it. During final debriefing sessions all participants were formally presented with a simplified version of the inquiry model. Volunteer students proved quite capable of an explanation of how they had played their role in terms of designative, appraisive and prescriptive inquiry.

Analysis of the videotape of main simulation activities suggested that the inquiry process at the macro level, the class as a whole, was predominantly designative at the outset of the simulation. Both resident and administrative groups acquainted themselves with specified roles and attempted to answer the basic designative question "What is my present situation?" Groups generally then engaged in goal setting and attempted to answer the basic appraisive question "What do I want?" Participant groups were eventually led to a consideration of what action to accord preference as they attempted to answer the predominantly prescriptive question, "What should I do to get what I want?" Throughout all simulation activities there appeared an interplay of designative, appraisive and prescriptive inquiry as participants were directed to an attempt to solve the basic problems of how to make successful transition.

Analysis of audiotapes of interactions within each group indicated a general goodness of fit between the inquiry process at the macro level and that at micro levels. For

most participant groups the setting of a major goal posed problems of how to achieve that goal. Most groups deliberated over the alternative courses of action which could best achieve their intermediary and ultimate major goal before making a final decision. However, there were exceptions. Some resident groups made decisions without designative inquiry into jobs, housing and services available in all five communities. Others made decisions without undergoing the structured activity of setting both intermediary and major goals and re-evaluating their goals. Some groups definitely engaged in decision-making in a more unstructured way than others. The fact that the decision-making model accommodated groups who deviated from the structured inquiry process was interpreted as a cue that the 'process' model, while structured to an extent, was nevertheless flexible enough to give participants freedom to make decisions in structured and unstructured ways.

Subsequent interviews with administrative groups indicated that some participants viewed the decision-making model of Transition as a logical one but one not always used. This observation did suggest that participants were engaged in the dynamic process of decision-making beyond the mere systemic or substantive process. While the investigation did not attempt to measure what students learned, analysis of interview transcripts and questionnaires suggested that some participants recognized for the first time the complex

dimensions of decision-making regarding transition. Some interviewed participants indicated that the simulation had taught them to examine alternatives more carefully before making decisions.

There was no evidence to suggest that participants had revised their goals at any stage in the simulation although numerous opportunities for re-evaluation and revision were provided during the first major piloting. Nevertheless, it appeared that all participants were engaged to a greater or lesser extent in the dynamic problem solving process. It was concluded that the decision-making model was valid since most participants engaged in designative, appraisive and prescriptive inquiry in a discernable way and found the inquiry model helpful in decision-making. The model was also flexible enough to accommodate those who did not use a structured inquiry process to make decisions and who clearly revealed that decisions are not always made in a logical structured way.

Throughout the developmental stages of Transition, materials were continually revised to present participants with problems to be solved and to have greater potential for in-depth student involvement. Activities were continually re-structured and re-sequenced so as to allow both residents and administrative groups opportunities to solve their problems via involvement in the dynamic process of decision-making. A concerted effort was made to ensure that participants in Transition would engage in designative, appraisive

and prescriptive inquiry. Such a process of formative evaluation of the basic decision-making model throughout the development process almost guaranteed that few major revisions of the model would be required.

## SUMMARY

In this chapter has been presented a detailed account of the actual assessment and subsequent revisions of the three basic components of Transition: the sequence of activities, the scenario of materials and the simulation model in terms of its substantive and decision-making dimensions. The formal revisions began during the major class piloting and continuted for a month and a half thereafter. In this Chapter has been described the manner in which numerous data sources influenced the assessment and revisions made by the decision-makers, the simulation development team.

# CHAPTER 6

## SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

The purpose of this study was to develop and operationalize a conceptual scheme for formative evaluation of a simulation called Transition. Transition was designed for Canadian students of secondary school social studies as part of the curriculum package of Project SURT, a subproject of Project Canada West. The study was specifically intended to provide feedback information into the developmental process in order that decision-makers, the simulation development team, could improve the product.

The study assumed an essentially two-fold dimension: a descriptive dimension and a judgemental dimension. An attempt was made to describe and assess the transaction between participant students and the simulation. The study was viewed as an initial investigation into the process dimension of a simulation.

The formative evaluation was guided by three questions:

1. What inquiry process do participants use in handling information presented them by Transition and how well do they use the structured inquiry process of the simulation?
2. What activities are participants engaged in during their simulation experience and how well do they engage in the

identified activities of Transition?

3. What are participant perceptions and attitudes to their simulation experience?

Literature and research relating to three themes was reviewed for this study: formative evaluation during program development, trends in simulation evaluation and the ethnographic approach to evaluative research. Literature relating to formative evaluation provided the basis for the conceptual scheme for the evaluation of Transition which was developed. The writings of Scriven (1967) gave particular insight into the goals and roles of formative evaluation as distinct from summative evaluation.

Three major reviews of simulation research: Cherryholmes (1966), Fletcher (1971) and Wentworth and Lewis (1973) indicated past trends in simulation evaluation and pointed to the exigency of future evaluations to focus on the process rather than the learning effects of simulations. A review of selected simulation studies indicated that evaluators have more often than not probed questions of convenience rather than those of importance to simulation developers and users. Literature related to simulations cued the investigator of the need to develop a broad enough research paradigm to allow for an analysis and evaluation of the way Transition might affect the total environment of the classroom.

Literature related to the ethnographic approach to

evaluation pointed out an alternative to the statistical orientation. An ethnographic orientation was chosen for this study as a means of formative evaluation which might indicate more about the complex transactions and interactions of the instructional setting. The literature and research reviewed provided many cues as to how to develop an operational scheme for the formative evaluation of Transition.

A description of the stages of development of Transition was presented in Chapter 3. The Johnson-Aoki Curriculum Development Model provided the conceptual framework for the development of the simulation. Both a systemic model and a problem-solving model were incorporated into the simulation model. The SURT Community Systems Model was chosen as the substantive model for Transition. The method of inquiry postulated by Morris was chosen as the theoretical base for the decision-making model incorporated as the core of the simulation.

The development of the intermediate versions of Transition was in many ways a non-linear process. The inquiry process of the development team was often a most unstructured one. Specific objectives for Transition were not formulated until after some three months of exploration of ideas and materials. The actual process of formative evaluation began with the first meeting of the simulation development team and became an integral part of the entire developmental process.

Four phases of operationalizing the conceptual scheme for formative evaluation were discussed in Chapter 4. In the preactive phase, decision was made to focus on the process dimension of Transition rather than engage in a pretest-posttest study. In order to capture key transactions and interactions, it was decided to audiotape and videotape selected segments of the simulation experience. Observations of simulation leader and non-participants, participant interviews, a questionnaire and classroom documents were also recognized as important potential data sources for the formalized evaluation study. Three components of the simulation were identified as worthy of formative evaluation: the sequence of activities, the scenario of materials and the simulation model in both its substantive and process dimensions.

The first interactive phase of formative evaluation involved an initial testing with eleven volunteer grade nine students at Vernon Barford Junior High School. The second interactive phase consisted of a major piloting with a grade nine social studies class of twenty-eight students. This piloting lasted for seven hours over four teaching days. The simulation leader for the piloting was the classroom teacher and co-developer of the simulation, Jane Sterk. Both initial testing and major piloting were observed in their entirety by the investigator.

The first postactive phase of the evaluation was

reported in the concluding section of Chapter 4. During this phase all data gathered during the first and second interactive phases, the actual student transactions with the simulation, were analyzed from an ethnographic perspective.

The assessment and subsequent revisions of the model, activities and materials of Transition were reported in Chapter 5. An attempt was made to describe the manner in which numerous ethnographic data sources influenced the decisions of the development team at this stage of the developmental process.

The revised edition of Transition will be retyped, collated and compiled for major piloting in thirty classrooms across Canada in 1974-75 as part of the SURT curriculum development package. Some questions regarding Transition which remain unanswered at the present time include:

1. For what level of the secondary school social studies curricula is Transition best designed?
2. For what curricula other than social studies is Transition suitable?
3. How do observations of non-developer simulation leaders across Canada regarding successes and deficiencies of Transition compare with those of the developers during the first major piloting?
4. How do the perceptions and attitudes of students across Canada compare with those of the students who participated in the first major piloting?

5. Does Transition involve students in the dynamics of decision-making when piloted in classrooms of non-developers?
6. Do systematic evaluations of Transition carried out in the 1974-75 school year produce significant findings regarding the simulation model, activities and materials which the formative evaluation overlooked?

There are many general questions in the mind of the investigator for which future evaluative research might provide answers. These include the following:

1. Is an investigation of the transaction process a logical and worthwhile focus for an evaluation of forms of instructional content other than simulations?
2. Is the ethnographic approach more appropriate for an analysis and evaluation of real life situations than of hypothetical situations such as are presented by simulations?
3. Are there limitations in the ethnographic approach to evaluations conducted in classroom settings?
4. What effects do various methods of introducing instructional content and various methods of grouping students have on subsequent transactions with content displayed?
5. Why do some displays of instructional content involve students while others do not? In what way can the potential of instructional content for in-depth student involvement be maximized?

6. Do specific simulations on the education marketplace provide situations that enable students to make decisions?
7. Can goals and roles of summative evaluation be incorporated into systematic evaluation of instructional content and teaching strategies in their formative stages of development?

## CONCLUSIONS

This study was of an exploratory nature into the process dimension of a simulation in its developmental stages by means of an ethnographic research approach. The following conclusions have been drawn from the study:

1. The ethnographic method has been found to be a most useful and fitting orientation for formative evaluation of instructional content and teaching strategies incorporated in a simulation. The ethnographic approach has provided the investigator with a deeper knowledge about the interrelations among teacher, students and their environment within the context of a simulation. The adoption of an ethnographic orientation to evaluation facilitated a holistic investigation of the classroom transaction process and allowed the investigator to be immersed in direct contact with student participants in the simulation.

The ethnographic approach proved most conducive to

an examination of the process dimension of the simulation, permitting the investigator to conduct research in an unstructured way and to be particularly open to search for unanticipated teacher and student reactions to the simulation. The ethnographic method should not be used when a structured research approach is desirable or when rigorous designs and objectivity are essential to an evaluative research study.

2. This study has convinced the investigator of the crucial complementarity of the process of development and formative evaluation. Designers of instructional content have too often indicated a need for evaluation but have merely appended evaluation to the developmental process. The investigator feels strongly that developers must not be so product oriented as to ignore the importance of formative evaluation. They must consider development and formative evaluation as integral and parallel stages in the developmental process. Formative evaluation is too crucial to be considered as an afterthought.

3. The evaluation which was built into the developmental stages in Transition involved very careful planning and a considerable investment of time and energy. Only after the study was the investigator fully convinced that such an investment was worthwhile. Any thorough attempts by curriculum developers and instructional planners to improve their products can be most enervating. However, the payoff is surely to be an improvement in the quality of instructional content and strategies of teaching in

our schools.

4. The decision to focus on the quality of the existential situation during student transaction with content displayed proved to be a most wise one. The investigation into intended and unanticipated experiential outcomes was found to be well suited to the role of formative evaluation, possibly moreso than an investigation of terminal learning outcomes might have been.

5. While summative evaluation has a role to play in the developmental process, the author feels that formative evaluation, though often underestimated if not completely ignored, has an equal if not more important role. More meaningful and extensive revisions to a product can be made while that product is in a fluid stage of development. In view of the fact that external non-developers played such an important role in the formative evaluation of Transition, the author feels that the traditional goals and roles of summative evaluation might be able to be incorporated into systematic evaluation of instructional content and teaching strategies in their formative stages of development.

## RECOMMENDATIONS FOR FURTHER STUDY

The following recommendations can be made for future researchers:

1. It is recommended that formative evaluations of forms

of instructional content other than simulations be conducted by future researchers. It is suggested that consideration be given to the ethnographic approach as a most fitting orientation for formative evaluation.

2. It is suggested that more extensive classroom ethnographies be conducted over extended periods of time. These might provide a description of rules and plans which students use to achieve intended outcomes in real life situations rather than hypothetical situations as presented by simulations. More extensive investigations into classroom transactions via the ethnographic approach might lead to the identification of important instructional variables and their antecedents and consequences overlooked by transactional analyses to date.

3. It is recommended that the transaction process be the focus for future formative and summative evaluation studies. Such studies should explore the use of carefully planned videotapes and audiotapes of selected segments of the classroom transactions, extensive interviews with students during and after the transaction process, student-developed materials and recorded direct observations of participant teachers and non-participants as potential means of tapping feedback from students and gaining insight into their inside point of view.

# BIBLIOGRAPHY

## BIBLIOGRAPHY


Adams, Dennis M. "Some Aspects of Simulation Gaming And Group Process," Unpublished Doctoral Dissertation, The University of Wisconsin, 1972.

Adams, Paul Wesley. "The Effect of the Life Career Simulation Game Upon The Decison-Making Process of Sophomore High School Students," Unpublished Doctoral Dissertation, The University of South Dakota, 1971.

Anderson, C. Raymond. "An Experiment on Behavioral Learning in a Consumer Credit Game," Unpublished Doctoral Dissertation. The University of Maryland, 1972.

Aoki, T. "A Curriculum and Instructional Design," (an address presented at the Project Canada West Workshop, June 19, 1970, Edmonton, Alberta).

Aoki, T. "Controlled Change: A Crucial Curriculum Component In Social Education," (a paper presented at the Annual Conference of the National Council for the Social Studies, Denver, Colorado, November 26, 1971).

Aoki, T. "Three Modalities In Social Studies," (a participant worksheet developed for a workshop session on Life Styles, Values & Quest Problems In Social Studies, University of Alberta, 1971).

Berreman, Gerald D. "Ethnography: Method and Product," Introduction To Cultural Anthropology. James Clifton, (ed.), Boston: Houghton Mifflin Company, 1968.

Biggs, J. B. "Learning: Past and Future," Perspectives On Curriculum. Faculty of Education, University of Alberta, Volume 2, 1973, 2-17.

Boocock, Sarane S. "The Effects of Games with Simulated Environments Upon Student Learning," Unpublished Doctoral Dissertation, The John Hopkins University, 1966.

Boocock, Sarane S. and James Coleman. "Games with Simulated Environments in Learning," Sociology of Education, Vol. 39, No. 3, Summer, 1966, 215-236.

Boocock, Sarane S. and E. O. Schild. Simulation Games in Learning. Beverly Hills California: Sage Publications, 1968.

Brissey, Lee. "Communication and the Mediation of Intelligence," University of Oregon (Mimeo).

Brissey, Lee, F. R. Fosmire, and R. J. Hills. "Problems, Problem Solving and Human Communication," (prepared for the Directorate of Information Sciences of the Air Force Office of Scientific Research and the Center for the Advanced Study of Educational Administration). Eugene: University of Oregon, 1969 (Lithographed).

Bruner, Jerome S. Toward a Theory of Instruction. Cambridge, Massachusetts: Harvard University Press, 1966.

Burgess, Philip, L. Peterson, and Carl Frantz. "Organizing Simulated Environments," Social Education. February 1969, 185-192.

Chartier, Myron. "An Experimental Study of a Simulation Game and Instrumented Discussion Upon The Learning Outcomes of Subjects," Unpublished Doctoral Dissertation, The University of Denver, 1971.

Cherryholmes, Cleo. "Some Current Research on Effectiveness of Educational Simulations: Implications for Alternative Strategies," The American Behavioral Scientist, Vol. 10, No. 2, Oct., 1966, 4-8.

Cronbach, Lee J. "Course Improvement Through Evaluation," Readings in Curriculum Evaluation. Peter Taylor and Doris Cowley (eds.), Dubuque, Iowa: Wm. C. Brown Company Publishers, 1972, 11-20.

Dawson, Richard E. "Simulation in the Social Sciences," Simulation in Social Science. H. Guetzkow (ed.), Englewood Cliffs, New Jersey: Prentice-Hall, 1962.

Erickson, Frederick. "What Makes School Ethnography Ethnographic?" Council on Anthropology and Education Newsletter. University of Pittsburg, July, 1973.

Feldmiller, Ilajean. "The Exploration of the Nature of Learning Experiences Upon Simulation Games As Revealed By Verbal Behavior," Unpublished Doctoral Dissertation, Ohio State University, 1970.

Fletcher, J. "What About Simulation?" (an address presented to the Western Regional Symposium on Instructional Simulations, Edmonton, Alberta, May 14, 1971).

Fletcher, J. "Evaluating Simulation Games," (an address presented to the Western Regional Symposium on Instructional Simulations, Edmonton, Alberta, May 14, 1971).

Fletcher, J. "The Effectiveness of Simulation Games As Learning Environments: A Proposed Program of Research," Simulation And Games. Beverly Hills, California: Sage Publications, 1970, 259-286.

Fry, Edward. "A Readability Formula That Saves Time," Journal of Reading, April, 1968, 513-578.

Garvey, D. M. and W. H. Seiler. "A Study of Effectiveness of Different Methods of Teaching International Relations to High School Students," (Final Report Co-operative Research Project No. S-270). Emporia: Kansas State Teachers College, 1966.

Gillespie, Judith A. "Analyzing and Evaluating Classroom Games," Social Education. Washington: National Council For The Social Studies, January, 1972, 34-42.

Goodman, F. L. "Gaming and Simulation," Second Hanbook of Research On Teaching. R. W. Travers (ed.), Chicago: Rand McNally, 1973, 926-939.

Hersom, Naomi. "The Enigma of Curriculum Evaluation," Perspectives on Curriculum. Faculty of Education, University of Alberta, Volume 2, 1973, 115-123.

Instructional Simulations Incorporated. Evaluating Learning Games and Simulation. St. Paul, Minnesota: Instructional Simulation Publications, 1972.

Johnson, Mauritz. "Definitions and Models in Curriculum Theory," Educational Theory, Vol. 17, April, 1967, 127-140.

Johnson, Mauritz. "The Translation of Curriculum into Instruction," Cornell University, 1968 (Mimeo).

Kachaturoff, Grace. "Student involvement in social studies through Simulation," The Clearing House, May, 1971, 541-544.

Mead, George Herbert. Mind, Self and Society. Charles W. Morris (ed.), Chicago: The University of Chicago Press, 1934.

Miller, Thomas W., and Harry Dhand. The Classroom Teacher As Curriculum Developer For Project Canada West. Saskatoon: Saskatchewan Teachers' Federation, 1973.

Mitra, Shib K. "Mirror, Mirror . . . ," American Educational Research Journal, Winter, 1974, Vol. 11, No. 1, 41-49.

Morris, Charles W. Signification and Significance. Cambridge, Massachusetts: The M.I.T. Press, 1964.

Morris, Charles W. Signs, Language and Behavior. New York: Prentice-Hall, 1946.

Nesbitt, William A. "Simulation Games for the Social Studies Classroom," New Dimensions: Booklets on the Social Studies and World Affairs, 1968.

Project SURT. A Study of Urban Rural Transition. Western Curriculum Project on Canada Studies, June, 1971.

Project SURT. A Study of Urban Rural Transition: Student Activities, 1972-1973. Western Curriculum Project on Canada Studies, June, 1973.

Raser, J. R. Simulation And Society. Boston: Allyn and Bacon Co., 1969.

Rippey, Robert M. (ed.). Studies In Transactional Evaluation. Berkeley, California: McCutchan Publishing Corporation, 1973.

Scriven, Michael. "The Methodology of Evaluation," Readings in Curriculum Evaluation. Peter A. Taylor and Doris M. Cowley (eds.), Dubuque, Iowa: W. C. Brown & Co., 1972.

Scriven, Michael. "An Introduction to Meta - Evaluation," Readings in Curriculum Evaluation. Peter Taylor and Doris Cowley (eds.), Dubuque, Iowa: Wm. Brown Company Publishers, 1972, 84-89.

Shaver, J. P. and Guy A. Larkins. "Research on Teaching Social Studies," Second Handbook of Research on Teaching. R. W. Travers (ed.), Chicago: Rand McNally, 1973, 1244-1259.

Shirts, R. G. and H. T. Sprague. Exploring Classroom Uses of Simulations. La Jolla, California: Western Behavioral Sciences Institute, 1966.

Smith, Louis M. and William Geoffrey. The Complexities of an Urban Classroom: An Analysis Toward A General Theory of Teaching. Holt, Rinehart and Winston, 1968.

Spradley, James P. (ed.). Culture and Cognition: Rules, Maps, and Plans. San Francisco: Chandler Publishing Company, 1972.

Spradley, James P. and David W. McCurdy. The Cultural Experience: Ethnography in Complex Society. Chicago: Science Research Associates, 1972.

Stake, R. E. "The Countenance of Educational Evaluation," Contemporary Thoughts On Public School Curriculum. Edmund Short and George Marconnit (eds.), Dubuque, Iowa: W. C. Brown & Co., 1968, 336-346.

Sterk, Jane. "Independence: A Simulation," Unpublished Master's Thesis, University of Alberta, Fall, 1971.

Wallace, Anthony. Culture and Personality. New York: Random House, 1970.

Wentworth, Donald R. and Darrell Lewis. "A Review of Research on Instructional Games and Simulations in Social Studies Education," Social Education. May 1973, 432-440.

Wentworth, D. R. "The Effectiveness of a Learning Game For Teaching Introductory Economics In Selected Two Year Colleges," Unpublished Doctoral Dissertation, The University of Minnesota, 1972.

Wittrock, M. C. and David E. Wiley (eds.). The Evaluation of Instruction Issues and Problems. New York: Holt, Rinehart and Winston, Inc., 1970.

# APPENDICES

## APPENDIX A

## PARTICIPANT-NON PARTICIPANT OBSERVATION SHEET

Directions

Using the designated Time Line of Simulation Activities as a guide, please describe each activity specifically as you witnessed it happen in terms of the simulation leader activities, student transactions and interactions, and particular simulation materials. Also indicate your judgement as to the successes and deficiencies as each activity was carried out.

Activity #1 (1)

Simulation Leader:

A little disorganized on part of game master. Some student interaction. However mainly of the question-answer variety. Students seemed a bit subdued because of mikes and camera equipment.

2nd Developer:

Jane explained the development of Transition. Activity adequate.

Investigator:

Leader in control of class. Presented information to students re Canada Studies, P.C.W. and SURT. Students listened attentively for whole activity, except for one group of boys. Background information appeared to be occasionally going over heads of students.

Activity #1 (2)

Simulation Leader:

Cannot distinguish this as separate from above. I don't think the idea of formative evaluation was well enough conveyed. No student interaction. Simply giving information.

2nd Developer:

Jane explained the role of students in formative evaluation of Transition. Don't really feel it mattered what was said. Possibly having had students write down their problems and suggestions regarding the game may have made this part more meaningful.

Investigator:

Leader indicated the importance of student roles in the revisions of the simulation. This appeared to be a most important activitiy for it seemed to encourage students to co-operate in subsequent activities. Students listened attentively.

Activity #1 (3)

Simulation Leader:

Comaprison of a simulation with an athletic game seemed to work well. Students were quiet but volunteered answers when questions were asked.

2nd Developer:

A few questions were raised. I think the presentation was good for students not having some knowledge of simulations. Others should be given general information about simulations prior to starting the game.

Investigator:

Leader should reiterate student comments so that the whole class can hear and benefit from ideas and suggestions. The transparency on the relationship between simulations and athletic games was very good in maintaining attention, as did reference to the Edmonton Eskimos. Boys immediately perked up.

Activity #2 (1)

Leader:

It would have helped to have a pointer when showing areas and centres involved. Description of fictional country seemed adequate although some questions were asked about latitude. It is important to indicate what sides are bound by water and what ones by land. Also, description of Lake Mistehae was omitted.

2nd Developer:

Description of provinces and communities being simulated very well presented.

Investigator:

It would be wise for the leader to use a pointer and refer directly to the map. Information presented clearly and explicitly.

Activity #2 (2)

Leader:

This may have been a little skimpy. Types of roles might have been clarified a bit more. Some students indicated great confusion at the end of this session. No student interaction.

2nd Developer:

Oral presentation quite good. Blackboard outline or one on overhead would have provided a more adequate frame of reference.

Investigator:

Clearer explanation needs to be given of the role of administrators, as well as the fact that each group plays only one role. Students appeared interested and attentive but quiet.

Activity #2 (3)

Leader:

Fairly orderly. A few questions as students went through. Students were quiet and appeared to concentrate on what was being read. Took longer than 15 minutes for students to complete booklet. What can be done about students who don't read carefully? Some students tried to help others.

2nd Developer:

Distribution and reading appeared to be effectively carried out.

Investigator:

Very orderly procedure for passing out manuals. Little or no interaction at this point. Each student read the booklet himself.

Activity #2 (4)

Leader:

It appeared that students didn't have many questions as game master went through manual, however this will be seen later. Some time should have been spent on the point system--what the points were and how to gain points.

2nd Developer:

Few questions since few students actively transacted with materials at this time. Activity needs to be retained to clear up potential problems.

Investigator:

One way communication when leader clarified participant manual. Leader asked for questions or problems but received few responses or requests for additional clarification. Activity appeared worthwhile and important for later play.

Activity #2 (5-6)

Leader:

Classes were divided into groups previously. Fairly orderly movement into groups occurred. Books distributed efficienctly and quickly. Some confusion when drawing role profile and picking up materials on part of residents.

2nd Developer:

Division of class into groups and drawing of role profiles adequate.

Investigator:

Appointment to roles appeared most effective and time saving. This should be suggested in leader's manual. Drawing of role profiles appeared "chaotic" momentarily. Have only one member of group draw card and other member get information booklets. All communities were represented by the random draw.

Activity #2 (7) + 3 (1, 2)

Leader:

Activity took longer than anticipated. Extra time required stemmed from careless reading. Questionnaire must be simplified. Too many good students going too slow. Maybe specify where they would look to find information.

2nd Developer:

Activity could have been used for explicit instructions using overhead or blackboard. Problem areas were:
1. Lack of directions re goals for administrators.
2. Confusion about interjecting own values into questions

where information not provided. 3. Lack of direction re looking for information in both role profiles and information booklets.

Investigator:

Students appeared eager to get into game. Need for explanation of administrative goal setting and class presentations. Leader-student interaction picked up. Need for better explanation of administrative packages. Extra time was required. Students permitted to prepare outside of class at their request.

Administrative groups ready to make presentations before resident groups had completed worksheets. Noted some unanticipated interaction between administrative group and resident groups before that scheduled activity. Indicated eagerness to get into information gathering.

Activity #3 (3)

Leader:

Some administrators had difficulty keeping speeches under two minutes. Talks very good. Students who were nervous spoke quickly.

2nd Developer:

Some students difficult to hear. Need to impress students with importance of making good presentations. Possibly important to have more vocal people in class acting as administrators.

Investigator:

Resident groups very attentive to speakers. Wide variations in manner of presentation--varying degree of reliance on written materials. Only one utilized map.

Activity #4 (1)
Leader:

Students seemed anxious to begin. Some prepared to start. A couple had a decision made before they began. Some waiting at tables. Maybe 5 minutes is too long, particularly after first round.

2nd Developer:

Effective because of previous instructions provided. Students advised to concentrate on getting information relevant to goals. Less time needed.

Investigator:

Leader cautioned about time limit and urged to get information for one goal each time. This should be only one suggestion for information gathering. Resident groups decided whether to split up or work together.

Activity #4 (2)

Leader:

Some waiting at administrators' tables. Student administrators didn't seem able to organize themselves.

2nd Developer:

Several problems evident. 1. Administrative groups unable to answer questions regarding their community. 2. Resident groups staying entire 10 minutes at one table asking questions related to many goals.

Investigator:

Students appeared attracted to administrators of same sex. One administrative group chose to spend all its time with one resident group. They indicated that they preferred a few citizens totally committed to the community.

Activity #4 (3)

Leader:

Much general discussion. Very few were prepared to make decisions at this point. Most had just picked up general information rather than anything specific.

2nd Developer:

Failed to perceive evidence of tentative decision-making although there may have been some. Perhaps tentative decisions should be written down on a card.

Investigator:

Students made no observable decisions, possibly feeling that an intermediate decision was a final irreversible decision, or possibly reserving any decision until after interaction with all communities.

Activity #4 (4)

Leader:

One group made final decision here. They appeared not to have considered all alternatives but my questions didn't seem to encourage a wider consideration of the problem. They appeared to impose their values over those of the person they represented. They weren't able to consider leaving a well paid job because of an ulcer. This was because of the students personal view of the importance of money.

I asked students to re-read goals and make changes where they felt necessary. Students appeared to take this seriously although few appeared to make any alterations.

2nd Developer:

Heard little evidence of re-evaluation of goals. Might be a good idea to have an extra sheet attached to the questionnaire for writing down revised goals. Adminitrators did not appear to be doing anything.

Investigator:

Leader clearly indicated the importance of goal re-evaluation in real life and encouraged students to do this with their simulation goals. Nevertheless, while students did appear to deliberate about their goals for a few minutes there was no evidence at this point of any changes in goals.

Activity #4 (5)

Leader:

This lasted longer than 10 minutes but probably should be kept shorter. Groups appeared to have evaluated the first round and seemed to pick out problems which could be remedied on subsequent rounds such as disorganization and not knowing what to ask and not having enough information. Most students indicated that they hadn't changed their goals, although they had evlauated them.

2nd Developer:

Resident groups had very little to say but the administrative groups did much better in answering question and brought out points mentioned in 4-2.

Investigator:

Students should be encouraged to speak loudly. Only

one group had visited all community administrators and gave a very general evaluation of their performances. Residents very reluctant to speak. Administrators did point out issues of concern and problem areas for them.

Activity #5 (1)

Leader:

Went through two rounds of decision-making. Groups appeared to know what they were doing. Administrative groups appeared to show differences. Some appeared to attract many people for inquiries, others very few. Zargay administrators still had problems finding answers to questions. Ross came up several times. Wastina lost people. Few came to ask questions. Administrators need something to do while residents compute points.

Third round moved quickly as students knew exactly what they needed.

2nd Developer:

Rounds of decision-making evidenced more interaction. Questions and answers much improved over previous day. Students moved more quickly among administrators. Several problems: related to unemployment, when to draw job cards, several groups after the same job, resident groups not qualified for many jobs, difficulties with points and formulas which must be thoroughly revised.

Activity #5 (2)

Leader:

Students had good insight into what had progressed. Some students indicated that when computing all aspects, a higher salary did not necessarily indicate that you came ahead. Others had problems when they drew cards indicating a negative situation. Administrators felt that they had done better.

2nd Developer:

Students vague, uncertain of what to say. There may be some way of better preparing students for these questions.

Investigator:

Administrators appeared to take a much more active role in debriefing. Resident groups were often inattentive. Noted especially one group which had bad luck at the draw

board. Very frustrated with the element of chance in the simulation.

Activity #5 (4)

Leader:

Formulas caused great difficulty. Satisfaction points were not as hard. Worksheets on which they put points need revision. Cut out lines on both sides and leave in appropriate column only. We must develop some sort of point computation for administrators, possibly based on their personal goals.

2nd Developer:

Particularly administrative groups had problems in computing satisfaction points. A lot of trouble with formulas all of which must be thoroughly revised.

Investigator:

Point system and all formulas definitely need revision if not rejection from the game activities.

Activity #6 (2)

Leader:

Most statements were very brief and didn't bring out as much as they should have. I think we should set a form specifying certain information that must be included--e.g.,

a. read last paragraph of role--why are they considering making a transition?
b. what goals set? why?
c. what actions they took in simulation?
d. what outcomes?
e. satisfaction points they gave themselves.

Otherwise it is difficult to make an evaluation of whether they played the simulation well.

2nd Developer:

Oral presentations indicated uncertainty over presentations. However, when prompted by specific questions they gave answers indicating good awareness of what was happening.

Investigator:

Groups definitely need more direction in how to make final presentation. Lack of questions from class indicated that many did not really understand the purpose of the

evaluation. They did not have much information on which to evaluate.

Activity #6 (3)

Leader:

Evaluation by three students seemed to go well. All students tended to give bonuses. I don't think they really got into the critique role. They should have been able to fault some for the way they played the role. Need to work out some point system for administrators so they can figure out a satisfaction point total.

2nd Developer:

Evaluation of each group by selected students extremely difficult due to unsuitability of student questionnaire. Repeated next day with revised questionnaire--much better although a more structured approach to the oral presentation would make it easier for evaluators.

Investigator:

Evaluation of groups seemed efficient, although one might question how serious the groups took it. All evaluations did not seem realistic. Students would not subtract points from a group's total score when some should have had points taken away from them. Possibly this whole activity needs a clearer explanation. Collection and tabulation of scores by student group was most efficient.

Activity #6 (4)

Leader:

General class discussion seemed a bit stale, probably because of the time between debriefing and the final round. I brought specific observations and we discussed them but few students brought forward any "spontaneous" reactions or comments.

2nd Developer:

Sorry, I don't seem to have any mental impressions of the effectiveness or non-effectiveness of this activity.

Investigator:

Leader appeared very organized and prepared for this final debriefing session. Unfortunately students were quite passive when it came to offering their views. They may have

forgotten the activities of five days before. Success of this activity greatly depends on the type of students involved. Reactions were not nearly as spontaneous and open as they had been during the initial testing.

Activity #6 (5)

Leader:

I felt that description of inquiry process was too brief and hurried. I would like to have spent more time getting students to show what they did and see if they could fit it to the model. The student who did attempt it did so adequately but I think we could have pursued the model more thoroughly. Possibly use it as a worksheet and find out which activities occurred according to the model.

A little pressured at the end because of the need to get out of the library.

2nd Developer:

Use of transparencies by the game master was quite effective. I believe that students were able to understand what the inquiry process is all about.

Investigator:

Unfortunately time would not permit extensive student involvement with the simulation model. The student that did attempt to relate his activities did indeed indicate that his group had used the inquiry process of the decision-making model in a most discernable way. I think this is a most important activity with which to conclude the simulation and one which should be clearly explained in a simulation leader's manual.

## APPENDIX B

### STUDENT PARTICIPANTS' QUESTIONNAIRE

1. I think that the introduction to the simulation should have been (circle one):

   a. longer

   b. shorter

   c. the length it was

2. I think that the following things should be added to the game:

   a.

   b.

   c.

   d.

   (Add more comments on the back of this sheet if you need to)

3. I think that the following things should be taken out of the game:

   a.

   b.

   c.

   d.

4. I found the following things difficult to understand: (check those that you found difficult and write comments if you wish)

   Comments

   _____ the introduction (what a simulation is)

   _____ the background information

   _____ the description of the problem of transition in the world today

Comments

_____ the description of the systems in a community

_____ the rules

_____ the information on my community

_____ the role description

_____ the Work Sheet

_____ the activity of setting goals

_____ the information which the resident groups wanted when they came to me for information (Administrative groups only check this one)

_____ the information which the administrative groups had when I went to them for information (Resident groups only check this one)

_____ making a final decision

_____ the formulas

_____ the credit points

_____ the evaluation of my group by other students.

5. I found the following things easy to understand: (check those that you found easy and write comments if your wish)

_____ the introduction

_____ the background information

_____ the description of the problem of transition in the world today

_____ the description of the systems in a community

_____ the rules

_____ the information on my community

_____ my role description

_____ the Work Sheet

_____ the activity of setting goals

Comments

_____ the information which the resident groups wanted (For Administrators only)

_____ the information which the administrative groups had (For Resident groups only)

_____ making a final decision

_____ the formulas

_____ the credit points

_____ the satisfaction points

_____ the evaluation of my group by other students.

6. I found that my role which was _____ in the community of _____, (difficult) (easy) to understand because _____

_____

7. I think I played my role (well) (poorly) because _____

_____

8. I think people playing this role need (more) (less) information because _____

_____

9. I think that my role was (important) (unimportant) to the success of our group because: _____

_____

10. I think that our group has an (important) (unimportant) role in this game because _____

_____

11. I think that this game is (too difficult) (too easy) (just right) for grade nine pupils because _____

_____

12. I was (happy) (not happy) with my group's final decision in the game because_____

_____

13. I think that I would play this game (better) (the same) (worse) if I were to play it again because_____

_____

14. I found this game (interesting) (uninteresting) because

_____

_____

If you have any suggestions for improving the game please feel free to add them below.

Suggestions

## APPENDIX C

### TIME LINE: SIMULATION ACTIVITIES

Activity #1: Pre-Run Operation: Introduction

1. Game Master explains briefly the development of Transition as associated with Project SURT. (Videotape)

2. Game Master indicates the importance of the role of students in the formative evaluation of Transition. (Videotape)

3. Game Master explains what a simulation is via comparison of simulation with an athletic game. Use of transparencies and overhead projector. (Videotape)

Total Time for Activity #1: 10-15 minutes

Activity #2: Introduction to the simulation Transition.

1. Game Master describes the provinces and communities being simulated in Transition. Use of wall map and transparencies. (Videotape)

2. Game Master explains the types of groups, roles and generally what is required of simulation participants. (Videotape) 10 minutes

3. Game Master passes out participant manuals and participants read manuals. 15 minutes

4. Game Master clarifies information in manuals. (Videotape) 5 minutes

5. Game Master divides class into groups and designates areas of the classroom for each group.

6. Participants draw role profiles and assume class positions. 10 minutes

7. Groups each read their information packs. 20 minutes

Total Time for Activity #2: 55 minutes

Activity #3: Worksheet and Goal Setting Decisions

1. Resident Groups complete worksheet and set goals and number specific goals in the order they will seek to achieve them. (Audiotape)

2. Administrative groups will set goals and prepare short statements for presentation. (Audiotape)
   25 minutes

3. Administrative Groups present statements to residents. (Videotape)
   5 minutes

Total Time for Activity #3: 30 minutes

Activity #4: Goal Achievement Decisions

1. Resident Groups prepare for information gathering.
   5 minutes

2. Resident Groups gather information via interaction with administrative groups. (Videotape)
   10 minute time limit

3. Resident Groups decide what they will do and then go to the drawing board and select a draw card. (Videotape)
   5 minutes

4. Resident Groups re-evaluate goals and decide what to do in the new situation presented by the draw card. (Audiotape)
   5-10 minutes

5. Resident Groups compute points.
   5 minutes.

6. Intermediate class debriefing session.

   Game Master asks: general questions: what happened? Why? What did you want to happen? What re-evaluation took place? What influence did people have on your decision as opposed to factual information? (Videotape)

   Game Master asks administrative groups: what did you observe? What kind of questions did resident groups ask? How did you budget your time? (Videotape)
   10 minutes

Total Time for Activity #4: 45 minutes

Activity #5: Whole Activity #4 Process Repeated.

1. Decisions made regarding living accommodations, job, cost of moving, cost of living, recreation, government, education, transportation. (Videotape)

2. Debriefing after every <u>other</u> round of decision-making. (Videotape)

3. Game ends when goals are achieved.
4. Groups compute total satisfaction points.
   Time Variance

Maximum Total Time: 80 minutes

Activity #6: Final Debriefing Session.

1. Each resident and administrative group prepare statements for class presentation:
   What were our goals? What was our situation to begin with? What decisions did we make? What satisfaction points did we give ourselves and why?
   5 minutes (Videotape)
2. Each group makes class presentation. (Videotape)
   20 minutes
3. Evaluation of each group by selected students.
   10 minutes
4. General class discussion of what occurred during the game. (Videotape)
5. Game Master describes the inquiry process used in the game.
   10 minutes (Videotape)

Total Time for Activity #6: 45 minutes

Transition Total Time: 4 hours 30 minutes

Activity #7: Post-Run Operation

1. Six students from various groups represented are interviewed. (Audiotape)
2. Remaining simulation participants complete a questionnaire re their simulation experience.
   30 minutes.

# APPENDIX D

## PHOTOGRAPHS OF SIMULATION TRANSACTIONS

PICTURE

1 Simulation leader introduces Transition.

2 Participant groups read materials and engage in designative inquiry.

3 Administrator makes class presentation to promote his community.

4 Participant groups engage in appraisive inquiry as they decide on their goals for the simulation.

PICTURE 1

PICTURE 2

PICTURE 3

PICTURE 4

PICTURE

5, 6, 7 Resident groups interact with administrators and move toward prescriptive inquiry and final decision-making.

8 Participant groups re-evaluate goals.

PICTURE 5

PICTURE 6

PICTURE 7

PICTURE 8

PICTURE

9 Administrators prepare for additional rounds of interaction.

10 Simulation leader conducts an intermediate debriefing session.

11 Participants compute credit and satisfaction points after decision-making.

12 Particpants engage in final debriefing.

PICTURE 9

PICTURE 10

PICTURE 11

PICTURE 12